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Papers

The connection with nature in Brazilian urban parks and its contribution to the wellness of the population and to child development

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Abstract
In the global environmental crisis, the importance of natural environments for society has been increasingly studied and incorporated into urban, environmental, leisure, and health public policies. The growing urbanization of the world population highlights the role played by green areas in the protection of diverse ecosystem services. Mostly, with emphasis on the benefits to health and well-being, both for the adult population and for children and adolescents. In this sense, this work aims to investigate the motivations and benefits perceived by visitors of urban parks in Brazil, related to ten dimensions of well-being, and child development. From a survey carried out with 816 visitors of parks located in the cities of Brasília, Rio de Janeiro, and Juiz de Fora, a similar sociodemographic profile was identified. The motivations to visit and the perceived benefits of visiting urban parks were high for all dimensions of well-being, with emphasis on the emotional dimension, followed by physical, environmental, spiritual, and social well-being. Significant differences were identified between cities. Three out of four visitors agree or strongly agree that urban parks bring benefits to children's development, mainly physical, respiratory, social, cognitive development, and anxiety reduction. The results, therefore, highlight the importance of urban parks in Brazil, promoting the well-being of society and benefits to child development. This reinforces the need for investment in public policies aiming at the creation and implementation of accessible and suitable green areas to allow everyday enjoyment to all citizens, particularly in the urban context.

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INTRODUCTION

The growing degradation of ecosystems and the species extinction crisis, added to climate change are the biggest environmental challenges for humankind (TILMAN et al., 2006; DIRZO et al., 2014). Within this context, the cultural services provided by ecosystems gain relevance (LEMIEUX et al., 2012), as well as the values associated with these services, especially those related to human health benefits (BUCKLEY, 2020).

This perspective has been incorporated into urban and health public policies, including medical prescriptions related to activities in natural environments (STELNRICH, 2017; RAZANI et al., 2018). The dissemination of this kind of approach, integrating the relationship between the connection with nature and the benefits to society, especially with a transdisciplinary focus (BARAL et. al, 2016; SCARANO, 2017), is a strategy to promote the value of natural areas and the conservation of nature, especially in developing countries, where the environmental crisis and precarious well-being and quality of life conditions are alarming.

Therefore, the role of natural areas for society, both more remote protected areas and urban green areas have emphasized the conservation of nature and the sustainable use of biodiversity as vectors of land development (SANCHO-PIVOTO; DEUS, 2015), promotion of people's well-being and quality of life (Braat; de Groot 2012; Barnaud et al., 2018) and of the cities' environmental quality (LARSON et al., 2016). Therefore, the emphasis on the way nature contributes to people (PASCUAL et al., 2017) is fundamental to value natural areas and nature as a whole.

The contribution of urban green areas for health and for the (re)connection with nature has guided the public policy agenda in many countries (BRAAT; DE GROOT 2012; BARNAUD et al., 2018). Institutional programs have been developed by governments, for example, in Australia ("Healthy Parks, Healthy People", MALLER et al., 2005, 2008), Canada (Parks Victoria, 2015), United States ("Healthy Parks, Healthy People US", NATIONAL PARK SERVICE, 2011), England ("Healthy Lives, Healthy People", NATURAL ENGLAND, 2012), and Spain (Europarc-España, 2013), most of them highlighting the relevance of urban and peri-urban parks, and their benefits for physical health, cognitive performance, and psychological well-being (MAZZEI et al., 2007; RUSSELL et al., 2013; KENIGER et al., 2013).

Therefore, urban green areas have fundamental importance as providers of diverse ecosystem services (WOLCH et al., 2014), as areas for the practices of physical activity, and increase of health and reduction of the risk of chronic illnesses, hypertension (KUO, 2001; CASEYET al., 2008; GRAHN; STIGSDOTTER, 2010; BARTON, PRETTY, 2010), and obesity (LEMIEUX et al., 2012; ROMAGOSA, 2018).

The role of green areas in urban space design is also highlighted, due to the importance of ecological processes, since these areas are able to filter air, reduce air, landscape, and sound pollution rates, promote thermal balance, improve water quality, and reduce floods (MAZZEI et al., 2007; LARSON et al., 2016). Urban green areas also serve as habitats for fauna and flora species (TRZYNA, 2014). These areas enable the connection with nature and create environments for sociability, which allow meetings and the practice of physical and leisure activities, with direct repercussions on the health of its visitors, such as reduction of sedentariness and the reduction of daily life stress (SZEREMETA; ZANNIN, 2013; BUCKLEY, 2020).

Beyond the benefits for the overall population, teenagers (Younan et al., 2016), and especially children, are benefited in many ways when they access natural areas and urban parks. Children's experiences in green areas increase emotional well-being, widen the benefits of physical exercise (FJØRTOFT et al., 2009; FLOYD et al., 2011), improve aspects related to school performance (WU et al., 2014), self-discipline (TAYLOR et al., 2002), cognition (WELLS, 2000; DADVAND, et al., 2015), and lightens behavioral problems (YOUNAN et al., 2016), attention deficit and hyperactivity symptoms (TAYLOR et al., 2002), and it also prevents obesity and other chronic illnesses (BLANCK et al., 2012). Besides, the presence of children in natural environments can awaken ethical and citizenship issues, thus influencing behaviors that favor the environment (LARSON et al., 2011; ASAH; BLAHNA, 2013).

Inspired by this debate, this work analyzes the motivations and benefits perceived by visitors related to the ten well-being dimensions, and for child development, in urban parks of three Brazilian cities. It also aims to understand the differences in the

motivations and perceptions of visitors in the cities where the parks are located.

METHODOLOGY

Studied areas

This study was conducted in urban parks of three Brazilian cities: Brasília, in the Midwest region, Rio de Janeiro and Juiz de Fora, in the Southeast of the country.

In Brasília, the study was conducted in two urban parks, located in the pilot plan. The *Parque da Cidade* (City Park), with 420 ha, has an expressive green area, sports courts, paved tracks for walking and cycling, besides stations with gymnastics equipment and children's parks. The Olhos d'Água Park is smaller, with 21,5 ha, and it counts with areas with native vegetation and planted woods, a small stream and a lake, a paved track, a network of small trails, besides children parks, a small gazebo for meetings and stations with gymnastics equipment. Considering the similar context of both parks in the territory, they were grouped for the objective of this work.

In Rio de Janeiro, the investigation took place in the Parque Nacional da Tijuca (Tijuca National Park, PNT), with 3.958 ha, which occupied a central position in the middle of the city and is considered one of the biggest urban forests in the world. Visitation at this conservation unit occurs in different areas, activities, and visitor profiles. Some sectors of the park are visited especially by the population that lives in the city of Rio de Janeiro, such as the forest sector, or Tijuca Forest, where the study was conducted, which counts with a visitor center, places for picnic, trails, and streams with access for bathing. It is much frequented by families and groups of friends, including children, and also by mountaineers who hike trails with different difficulty levels.

In the city of Juiz de Fora (Minas Gerais), the investigation was conducted in the Parque Natural Municipal da Lajinha (Natural Municipal Parque of Lajinha, PNML), one of the main medium-sized urban green areas of the municipality. Lajinha Park has 86 ha, with 49 ha composed of fragments of the Atlantic Rainforest (Montane Semideciduous Seasonal Forest), 30 ha of reforestation areas, and 7,5 ha of intensive use areas. This intensive -use area is open to the public for leisure and tourism. The park counts a public -use structure composed of a walking track, short trails, lake, vivarium, open-air gym, playground, kiosk, toilets, stage for cultural presentations, and Center of Environmental Education.

Methodological procedures of the research

The data were collected in the four parks through *in -loco* interviews with visitors, conducted between October 2019 and February 2020, during weekdays and weekends. People over 18 years old were interviewed and, whenever they were in groups, only one representative of the group was interviewed, selecting the one with the closest birthday so to keep the sample independent and minimize sample biases. The formulary and the answers were registered with the use of the ODK platform – Open Data Kit, by using smartphones or tablet computers. The form proposed by Lemieux et al. (2012) was used, containing four question blocks: (1) Sociodemographic variables: gender, age, group type, average monthly family income, schooling level, place of residence, and whether the interviewee was accompanied by children during that visit; (2) Motivations, related to the well-being dimensions that had motivated visitors to visit the park on that day and, (3) benefits, or harms, perceived by visitors during the visit. To understand the motivations and benefits, 10 well-being dimensions were considered (*sensu* LEMIEUX et al., 2012, Table 1).

Table 1 - Ten well-being dimensions (*sensu* LEMIEUX et al., 2012) considered to analyze the motivations and benefits to the health of urban park users, in three Brazilian cities.

Well-being Dimension	Description
Physical	Involves activities such as walking, cycling, running and gymnastics.
Emotional or Psychological	To recover from tiredness/mental stress, relax, rest and chill.
Social	For opportunities for more social interaction/union with family and/or friends.
Intellectual	For opportunities of getting involved in intellectual, creative, and stimulating activities.
Spiritual	To feel connected with nature, seek inspirations from nature, seek meaning/life purpose, meditate.
Ecologic	To experience, and know the natural environment, develop ecologic citizenship.
Environmental	To make use of an open-air environment, with more desirable weather conditions; the possibility of making connections with the place.
Cultural	To experience cultural and historical heritage, cultural events, and/or traditional knowledge.
Occupational/labor	To improve working conditions after the visit.
Economic	To support local economy and commerce.

Source: Adapted from Lemieux et al. (2012).

In the case of studies on motivations, for each of these dimensions or attributes, the interviewee was asked regarding its level of importance, on a scale ranging from 1 (no importance) to 5 (very important). While for the case of benefits, or harms, perceived by the visitors, for each attribute, questions ranged in an answer scale from 1 (much worse) to 7 (much better), regarding how they felt after that visit.

The fourth block approached the benefits of the visited green areas for children's development, perceived by adult visitors, covering eight aspects of child development: physical development; social skills; cognitive and language learning; communication skills; anxiety reduction; hyperactivity and attention deficit symptoms reduction; personal development and self-discipline; and reduction of breathing problems. For these attributes, the visitors answered whether they agreed to these benefits for child development, on a scale from 1 (completely disagree) to 7 (completely agree).

The data were systematized in a data spreadsheet (Excel) and the answer frequencies were computed in each category, for each city, as well as the average values and standard deviation were calculated for each variable, in each city. The difference among cities, for each variable, was examined with the Kruskall-Wallis test, a non-parametric test, to compare two or more samples of various sizes and adequate for comparisons using the Likert scale, in the ActionStat extension for Excel.

RESULTS

The profile of interviewed visitors is similar for the three studied cities, with a balance presence between men and women. Around 50% of the users aged from 25 to 44 years old, with no statistical differences among cities. Most visitors have attended higher education, over 75% in Brasília and in Rio de Janeiro, and significantly lower, 67%, in Juiz de Fora. The monthly income of urban park visitors is significantly higher in Brasília, with around 70% of the visitors with a family income above four times the minimum wage, while in Rio de Janeiro and Juiz de Fora, most of the visitors, around 55%, have family incomes below four times the minimum-wage (Table 2).

Table 2 - Sociodemographic variable of urban park visitors in Brasília (DF), Juiz de Fora (MG) and Rio de Janeiro (RJ). Data was collected *in loco* interviews with visitors, between October 2019 and February 2020. The asterisks (*) indicate sample differences among the cities. MW = minimum wage.

	Brasília		Juiz de Fora		Rio de Janeiro		Total	
	n	%	n	%	n	%	n	%
Gender								
Male	158	57.5%	181	47.3%	71	44.9%	410	50.2%
Female	117	42.5%	202	52.7%	87	55.1%	406	49.8%
Age								
Up to 15 years old	2	0.7%	4	1.0%		0.0%	6	0.7%
15 to 24 years old	58	21.1%	68	17.8%	34	21.5%	160	19.6%
25 to 34 years old	62	22.5%	123	32.1%	36	22.8%	221	27.1%
35 to 44 years old	66	24.0%	95	24.8%	45	28.5%	206	25.2%
45 to 65 years old	60	21.8%	81	21.1%	36	22.8%	177	21.7%
Older than 66 years old	27	9.8%	12	3.1%	7	4.4%	46	5.6%
With Children								
No	174	87.0%	304	79.4%	54	34.2%	532	71.8%
Yes	26	13.0%	79	20.6%	104	65.8%	209	28.2%
Schooling*								
Primary Education	4	1.5%	25	6.5%	5	3.2%	34	4.2%
Elementary Education	57	20.7%	101	26.4%	28	17.7%	186	22.8%
Unfinished Higher Education	36	13.1%	75	19.6%	36	22.8%	147	18.0%
Finished Higher Education	119	43.3%	141	36.8%	57	36.1%	317	38.8%
Post-Graduate Education	59	21.5%	40	10.4%	32	20.3%	131	16.1%
Family Income*								
Up to 2 MW	33	12.0%	113	29.5%	43	27.2%	189	23.2%
2 to 4 MW	50	18.2%	96	25.1%	45	28.5%	191	23.4%
4 to 10 MW	106	38.5%	99	25.8%	46	29.1%	251	30.8%
10 to 20 MW	63	22.9%	39	10.2%	18	11.4%	120	14.7%
Above 20 MW	23	8.4%	6	1.6%	6	3.8%	35	4.3%
Did not wish to inform		0.0%	30	7.8%		0.0%	30	3.7%

Source: The authors (2022)

The motivations to visit urban parks were high for all well-being dimensions (Table 3), and the frequencies regarded as important or very important were:

- Psychological/emotional – 90% in Brasília and Juiz de Fora, and 98% in Rio de Janeiro;
- Environmental – 96% in Rio de Janeiro; 94% in Brasília and 88% in Juiz de Fora;
- Ecologic – 94% in Rio de Janeiro; 89% in Brasília and 73% in Juiz de Fora;
- Spiritual - 89% in Rio de Janeiro, 83% in Brasília and 88% in Juiz de Fora;
- Physical – 86% in Rio de Janeiro; 89% in Brasília and 79% in Juiz de Fora;
- Social – 94% in Rio de Janeiro, 75% in Brasília and 77% in Juiz de Fora.

These six dimensions were the most important ones for all cities (Table 3). On the other hand, the economic dimension was the least important one, with 25% to 35% of visitors having reported it as of no or little importance, in all three cities. Eight out of ten analyzed dimensions presented significant differences among cities, even though they were generally considered important or very important by most visitors of the studied urban parks. The motivations for physical, intellectual and environmental well-being were significantly bigger in Brasília and Rio de Janeiro, when compared with Juiz de Fora. While the motivations of social and spiritual well-being were significantly higher in Rio de Janeiro. Cultural motivation also presented differences among the three cities, being higher in Rio de Janeiro, followed by Brasília and, lastly, Juiz de Fora. And the economic one was lower in Rio de Janeiro, followed by Brasília and Juiz de Fora (Table 3).

Table 3 - Motivations related to well-being and health for visiting urban parks in Brazil. Data was collected *in loco* interviews with visitors, between October 2019 and February 2020. The presented values represent the average and standard deviation of the samples and the rank of the variable or well-being dimension in each city. Asterisks (*) indicate sample differences among cities.

	Brasília			Juiz de Fora			Rio de Janeiro			K	*P*
	$\bar{X}$	±SD	Rank	$\bar{X}$	±SD	Rank	$\bar{X}$	±SD	Rank		
Psychological/Emotional	4.65	0.70	1	4.62	0.70	1	4.78	0.46	1	4.42	0.11
Environmental*	4.65[a]	0.65	1	4.37[b]	0.90	3	4.73[a]	0.53	2	32.83	>0.0001
Spiritual*	4.35[b]	0.99	4	4.44[ab]	0.95	2	4.53[a]	0.94	4	6.51	0.04
Physical*	4.60[a]	0.80	2	4.16[b]	1.17	5	4.47[a]	0.91	5	33.40	>0.0001
Ecological*	4.49[b]	0.80	3	3.96[c]	1.23	7	4.68[a]	0.64	3	61.39	>0.0001
Social*	4.15[b]	1.05	6	4.15[b]	1.10	6	4.53[a]	0.73	4	14.06	>0.001
Occupational	4.23	0.95	5	4.23	1.06	4	4.04	1.23	8	2.88	0.24
Cultural*	4.11[a]	1.04	7	3.89[b]	1.19	8	4.29[c]	1.02	6	15.82	>0.001
Intellectual*	3.99[a]	1.13	8	3.64[b]	1.29	9	4.15[a]	1.08	7	22.80	>0.0001
Economic*	3.52[ab]	1.27	9	3.56[a]	1.30	10	3.16[b]	1.51	9	7.69	0.02

Source: the authors (2022)

After visiting urban parks, people felt better or much better in all well-being dimensions (Table 4), with different frequencies, with emphasis on:

- Psychological/emotional - 90% of the visitors felt better or much better in this aspect after visiting the parks in all three studied cities;
- Physical - 92% in Brasília, 84% in Rio de Janeiro and 81% in Juiz de Fora.
- Environmental - 88% in Brasília, 90% in Rio de Janeiro and 75% in Juiz de Fora;
- Spiritual - 79% in Brasília, 85% in Rio de Janeiro and 86% in Juiz de Fora;
- Social, 84% in Rio de Janeiro, 68% in Brasília e 69% in Juiz de Fora.

In contrast, regarding the economic dimension, 37%, 40% and 42% of the visitors did not feel better or worse after the visit. Significant differences were observed among cities regarding the benefit perceived for all dimensions, except for the occupational one (Table 3).

Table 4 - Perception of benefits related to well-being and health after visiting urban parks in Brazil. Data was collected *in loco* interviews with visitors, between October 2019 and February 2020. The presented values represent the average and standard deviation of the samples and the rank of the variable or well-being dimension in each city. Asterisks (*) indicate sample differences among cities.

	Brasília			Juiz de Fora			Rio de Janeiro			K	*P*
	$\bar{X}$	±SD	Rank	$\bar{X}$	±SD	Rank	$\bar{X}$	±SD	Rank		
Psychological/Emotional*	6.73[a]	0.72	1	6.46[b]	0.75	1	6.61[c]	0.72	1	42.18	>0.0001
Physical*	6.57[a]	0.71	2	6.28[b]	0.95	3	6.39[ab]	0.95	4	13.83	> 0.001
Environmental*	6.45[a]	0.79	3	6.11[b]	0.96	5	6.49[a]	0.73	2	31.13	>0.0001
Spiritual*	6.21[b]	1.00	5	6.42[a]	0.88	2	6.42[a]	0.98	3	9.89	> 0.01
Social*	5.91[b]	1.19	7	5.92[b]	1.18	6	6.33[a]	0.87	5	13.90	> 0.001
Ecologic*	6.31[a]	0.87	4	5.67[b]	1.22	7	6.28[a]	0.89	6	56.63	>0.0001
Occupational	6.09	1.03	6	6.15	1.07	4	5.91	1.42	9	2.27	0.32
Cultural*	5.72[a]	1.16	9	5.48[b]	1.20	8	5.97[c]	1.27	7	26.48	>0.0001
Intellectual*	5.76[a]	1.18	8	5.43[b]	1.19	9	5.92[c]	1.38	8	30.38	>0.0001
Economic*	5.19[a]	1.30	10	5.14[a]	1.27	10	4.70[b]	1.78	10	7.55	0.02

Source: The authors (2022).

Generally, over 80% of the visitors agree or strongly agree that urban parks bring benefits for child development, in all analyzed aspects (Table 5). Physical development was the highest perceived benefit, for all parks. In Brasília, 96% of the visitors agree or strongly agree that urban parks promote this benefit, a significantly higher frequency than (92%), and for Rio de Janeiro (89%). The development of social skills and the reduction of anxiety are also among the main perceived benefits, with agreement or strongly agreement of 88%, 90%, and 82% for the benefits perceived in the social aspect, and 88%, 87%, and 82% for anxiety in Brasília, Juiz de Fora, and Rio de Janeiro, respectively. Cognitive development is another important aspect, with 88%, 89% and 76%, just as the development of communication (83%; 86%; 75%), and the reduction of attention deficit and hyperactivity, with 84%, 77%, 77% of agreement and strong agreement in Brasília, Juiz de Fora, and Rio de Janeiro, respectively.

Table 5 - Perception of child well-being and health benefits of visiting urban parks in Brazil. Data was collected *in loco* interviews with visitors, between October 2019 and February 2020. The presented values represent the average and standard deviation of the samples and the rank of the variable or well-being dimension in each city. Asterisks (*) indicate sample differences among cities.

	Brasília			Juiz de For a			Rio de Janeiro			K	*p*
	$\bar{x}$	±SD	Rank	$\bar{x}$	±SD	Rank	$\bar{x}$	±SD	Rank		
Physical*	6.68[a]	0.71	1	6.48[b]	0.68	1	6.49[ab]	1.01	1	10.27	0.006
Respiratory*	6.54[a]	0.87	2	6.32[b]	0.94	3	6.37[a]	1.23	2	6.541	0.04
Social	6.44	0.84	3	6.34	0.73	2	6.36	1.02	3	3.03	0.22
Anxiety	6.37	0.88	4	6.34	1.11	2	6.34	1.17	4	2.03	0.36
Cognitive Development	6.34	0.95	5	6.30	0.88	4	6.18	1.07	5	1.41	0.49
Communication	6.27	0.91	6	6.19	0.93	5	6.09	1.13	7	1.58	0.46
Hyperactivity and Lack of Attention	6.25	1.08	7	5.97	1.26	6	6.12	1.28	6	3.28	0.19
Personal Development	6.13	0.95	8	5.96	0.97	7	6.08	1.19	8	3.16	0.21

Source: The authors (2022).

DISCUSSION

The most important well-being dimensions to motivate visits to urban parks were also those with the biggest perceived benefits. The reported benefits were higher for the emotional/psychological dimension, nine out of ten visitors have felt better or much better regarding this aspect after the visit. This situation was also observed in Canadian parks, in a study conducted with the same protocol of this research (LEMIEUX et al., 2012). The relation between well-being, especially in the psychological dimension, or mental health, and the presence and easy access to urban green areas is being increasingly more documented and corroborated, in different spatial scales, in international literature (e.g., TRZYNA, 2014; ROMAGOSA et al., 2015; WOOD et al., 2017).

Besides the improvement of psychological well-being, eight out of ten visitors of the studied Brazilian urban parks have felt better or much better in the physical, environmental, spiritual, social, and occupational dimensions of well-being. Therefore, in accordance with studies conducted in England (ELLIOT, 2015), Norway (ARADI et al., 2015), Canada (LEMIEUX et al., 2012), and Spain (ROMAGOSA, 2018), we reinforce the importance of urban parks for the practice of physical activities, but also draw attention to the other cultural services provided by the parks for citizens.

Urban park users were also motivated and felt better or much better with the visit regarding the ecological dimension, related to the development of environmental citizenship. Therefore, beyond the psychological, physical, and social dimensions of well-being, which are directly related to human beings, it is important to highlight these areas' role in strengthening public support and a nature conservation culture among citizens (WHRIGHT; MATHES, 2015), which is in line with values related to sustainability and biodiversity conservation, fundamental principles of ecotourism (BUCKLEY, 2009;

FRANCO et al., 2021). Urban green areas, such as parks, botanical gardens, and zoos have a highlighted importance for the formation of attitudes in favor of the environment, especially when the visitor experience is incremented with inspiring interpretative approaches (BALLANTYNE et al., 2009; SARLAT et al., 2013). Therefore, it is strategically important to understand the contribution of urban parks, especially in Brazil, for the creation of knowledge, environmental awareness, and changes in the attitudes and behavior regarding the environment, conscious consumption, and support to environmental policies, which is a necessary research area committed to emerging themes in the development of countries.

Children's connection with nature is essential for a full and healthy development (CHAWLA, 2015). The growing separation from this contact has implications that are environmental, social and psychological and emphasize a series of disorders in child development known as nature deficit disorders (CHARLES, et al., 2008). Urban environments are generally highly deprived from nature, which highlights, even more, the importance of green areas in this context. The perception of the contribution for these dimensions of child development was even higher in Brazil, when compared to the study conducted in urban and peri-urban parks in Canada, in which the contribution to physical, social, and cognitive development was highlighted (LEMIEUX et al., 2012). Frequent visits and a family culture of enjoying urban green areas enhance health and well-being and prevent obesity, especially for children (BLANCK et al., 2012).

The green areas that conserve natural characteristics, such as the environment's heterogeneity and complexity, such as some peri-urban parks, are even more favorable areas for motor development in children (FJØRTOFT et al, 2009; CHAWLA, 2015). Urban green areas that provide adequate and diverse equipment, such as play equipment, sports courts, trails, and circuits can optimize the engagement of young people and children with physical activities and socialization (FLOYD et al., 2011).

Another child development benefit especially perceived by users of the urban parks involved in this study is related to the reduction of respiratory problems. Indeed, many studies around the world have highlighted the benefits of urban green areas for the reduction of respiratory problems such as asthma, bronchitis, and colds for children who live close to these areas, in the United States (DOUGLAS et al., 2019), Italy (SQUILLACIOTI et al., 2019), and Spain (TISCHER et al., 2017). The reduction of anxiety and the contribution for the children's cognitive development were also highlighted by urban park users in Brazil. Exposure to natural environments contributes significantly to the cognitive development of children and teenagers, with benefits that extend to adult years (CHERRIE et al., 2019).

The values found in all three Brazilian cities were high, however, there were some significant differences among motivations, perceived benefits to well-being and to child development, which may be related to specificities of each city.

In Rio de Janeiro and in Brasília, motivations related to the physical and environmental dimensions of well-being were higher than in Juiz de Fora (Table 3), indicating the search for urban green areas to exercise and be in more mild environments in terms of weather and sound pollution. This contrast can be related to the urban context of these big state capitals, among the three biggest in Brazil, with seven and three million inhabitants, respectively (IBGE, 2020). The high importance of urban green areas to exercise and be in more favorable environments for well-being, in these metropolises, is corroborated by the benefits perceived in these dimensions, which were also significantly higher in Rio de Janeiro and Brasília, when compared to Juiz de Fora (Table 4).

On the other hand, the motivation for visiting urban parks in search for inspiration and connection with nature, to meditate and reflect on the meaning of life (spiritual dimensions), despite being high in all cities, was significantly higher in Juiz de Fora and Rio de Janeiro, when compared to Brasília, and the same difference was observed in the perceived benefits. A possible explanation can be related to the high rates of violence and urbanization, in Rio de Janeiro, and the lack of urban green areas, in Juiz de Fora, making the Parque Nacional da Tijuca (RJ), and the Parque Natural Municipal da Lajinha (JF), respectively, work as a kind of natural refuge in midst of the urban environment, which is frequently stressful and chaotic. On the other hand, the abundance of accessible urban green areas in Brasília, especially in the Pilot Plan

area, where this study took place, makes the emphasis on the spiritual dimension to be comparatively lower.

It is also interesting to observe that the motivation to get to know more about the natural environment and to develop ecological citizenship (ecological dimension), to get to know and use the cultural heritage (cultural dimension), and engage in intellectual activities (intellectual dimension) were significantly higher for the PNT, which is a protected area created with the aim of preserving and highlighting these values for society. Next, these dimensions were also significantly different and higher for urban parks in Brasília than in Juiz de Fora, which, despite being parks immersed in an urban matrix, frequently present interventions, exhibitions, and activities that aim to stimulate the ecological, intellectual, and cultural aspects of these spaces and within them. The motivations and benefits to the social dimension were significantly higher in the PNT, where there is a higher concentration of areas destined for socialization, such as leisure areas and equipment for picnics.

Regarding the perceived benefits for children, there was a significant difference among the cities in the physical dimension, with the perception of even higher benefits in Brasília, where parks are relatively well-equipped for this age group, with playgrounds, grass lawns, and areas for recreation. There was also a difference regarding the perceived benefits to the reduction of respiratory problems, with significantly higher values for Brasília and Rio de Janeiro when compared to Juiz de Fora, which may be related to the size of these megacities, and to the period of intense drought, in Brasília, and to the urban densification and intense traffic and atmospheric pollution, in Rio de Janeiro.

This study must be considered a preliminary approach. Specific analyses of urban park visitation regarding their availability, accessibility, management, and implementation in different land contexts in the cities and among different regions of the country must be encouraged. To understand the use of these areas by different segments of the society, their contribution to the conservation of biodiversity and the attitude and behavior shift in favor of nature conservation is strategic for public policies and the environmental management of the country and of the world, which is increasingly more urbanized.

FINAL REMARKS

This study has highlighted the fundamental function of Brazilian urban parks for the promotion of health and well-being for the population and for child development. The relative contribution of different well-being dimensions for the users seems to be related to the specific characteristics of each city, but also to aspects related to the infrastructure and management of the parks. The results reinforce the necessity of investing in public policies directed to the access to green areas, with quality and capacity of serving different age groups with safety, proper equipment, and present in all areas of the cities, thus allowing its daily use by every citizen and the encouragement to the formation of an ecological consciousness in favor of the conservation of nature.

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AUTHORS CONTRIBUTION

André de Almeida Cunha, Francesc Romagosa Casals, Camila Gonçalves de Oliveira Rodrigues and Altair Sancho-Pivoto designed the study; André de Almeida Cunha, Camila Gonçalves de Oliveira Rodrigues and Altair Sancho-Pivoto collected the data and wrote the text. André de Almeida Cunha analyzed the data.