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The physical environment of positive places: Exploring differences between age groups

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ABSTRACT

Features of the physical environment have an impact on the human behaviour. Thus, planners and policymakers around the world should aim at providing environments that are perceived as being of good quality, in which the residents enjoy spending time and moving around in. It is widely acknowledged that urban environmental quality associates with well-being, but there is currently very little research examining which features of urban environments people of different ages perceive as appealing in their living environments. Individuals experience different age-related developmental environments throughout their life course.

Thus, the usage and perceptions of different spaces can also differ between various age groups. Public Participation GIS datasets collected in 2009 and 2011 in Helsinki Metropolitan Area were used to study places perceived as being positive by adults ($n = 3119$) and children ($n = 672$). Participants marked points on a map that were overlaid with GIS data to study whether the physical environment of positive places of different age groups differed. The results demonstrated that the physical environment differs significantly in the positive places of different age groups. The places of adult age groups were characterized by green, blue and commercial spaces, whereas sports, residential and commercial spaces characterize children's and adolescents' places. Older adults' places were found to be closest to home, while adolescents' places were the most distant. Providing appealing environments for all age groups in one setting remains problematic but should nevertheless be strived for, especially in the urban context where a constant competition over different usages of space occurs.

1. Introduction

Features of the physical environment can have an impact on human health (Golicnik and Ward Thompson, 2010; Sallis et al., 2016). Also, the perceived quality of the built environment has been found to be strongly associated with well-being (Kyttä et al., 2016). Thus, built environments yield challenges for urban planners contemplating spatial decisions to promote the well-being and health of urban dwellers (Corburn, 2015; Giles-Corti et al., 2016).

Numerous studies have suggested that built environment can have an influence on physical activity (PA) behaviour, mobility or safety, as well as perceptions of environmental quality, and thus contribute to the health and well-being of urban residents (Bonaiuto et al., 1999; Broberg et al., 2013; Foster and Giles-Corti, 2008; Fornara et al., 2009; Kerr et al., 2012; Kyttä et al., 2013; Sallis et al., 2016; Van Kamp et al., 2003). However, there is relatively little empirical research that focuses on studying what types of environments people choose to go to and which types of features of the environment attract different individuals.

Research is needed that identifies which types of environments different people find enjoyable and choose to go to. Such knowledge could enhance urban planners' understanding of which characteristics of the built environment encourage different people to go outdoors. Individuals experience different developmental environments throughout their life course (Salmela-Aro, 2009). Such age-related life phases are linked to normative and institutional structures among other life events that bring different demands, challenges and opportunities to an individual (Nurmi, 1992; Salmela-Aro, 2009). Due to changing social, cultural and institutional environments between different life stages, an individual's daily sphere is being shaped by various temporal and spatial demands and opportunities. Thus, the usage and perceptions of different spaces can also differ between different age groups. While some studies have explored different age groups' perceptions or life goals (Abdullah et al., 2013; Cross and Markus, 1991; Nurmi, 1992), there is currently little empirical research examining which types of environments people of different ages find appealing.

Because for most age groups, greater levels of PA is gained by getting outdoors instead of remaining inside (Ward Thompson, 2013), research that attempts to understand what kinds of environments can encourage people to get outdoors is needed. While evidence suggests that urban and transport planning affect the health and well-being of residents

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(Giles-Corti et al., 2016), there is also evidence that neither the configuration of an environment per se nor the dimensions of usage anticipated or desired are sufficient for its success and popularity (Golicnik and Ward Thompson, 2010).

A transactional place-based study approach allows for the study of what types of environments people choose to go to and which features of the environment attract individuals of different age groups. In the transactional person–environmental research, the relationship between a person and the environment is seen as dynamic and interactive, and the active role of both parties is emphasized (Altman and Rogoff, 1987; Kyttä et al., 2013). The transactional person–environmental research attaches individual's behaviour and experiences within the physical, social and cultural context in the time and place in which they occur (Kyttä et al., 2013). As for the place-based study approach, the localization of human experiences on a map has a key role, and it provides possibilities for empirical investigations of environments used by residents (Brown and Kyttä, 2014).

This paper adopts a transactional place-based approach to identify the types of built environments different age groups find appealing and enjoyable. An underlying aim of this paper is to create a better understanding of which physical features of the environment people of different age groups enjoy and find appealing and thus could promote urban dwellers to go outdoors and gain greater levels of PA and other known health and well-being benefits. The authors hypothesize that the usage and perceptions of different outdoor environments differ among different age groups as per the predictions from life course approach (Abdullah et al., 2013; Cross and Markus, 1991; Nurmi, 1992).

2. Methods

2.1. Data collection and sample

Forming a transactional place-based understanding is not only a theoretical but also a methodological challenge, as research has to take into account both the spatial (i.e. the physical environment) and person-based (i.e. personal preferences) dimensions. However, recent development in GIS science, especially in public participation GIS (PPGIS), offers new possibilities. PPGIS methods are developed for collecting spatial experiential knowledge and engaging non-experts to identify the spatial dimensions of the environment (Brown and Kyttä, 2014). Tulloch (2008) describes PPGIS as a "field within geographic information science that focuses on ways the public uses various forms of geospatial technologies to participate in public processes, such as mapping and decision making."

Two PPGIS surveys were used here to study places perceived as being positive by residents representing various age groups. The respondents used an Internet interface to mark on a map positive locations of their living environment (Fig. 1). This study combines datasets from two distinct surveys conducted in the Helsinki Metropolitan Area (HMA), Finland. In both surveys, the respondents placed as many markers of their choice on the map as they wished. The respondents were asked to mark on a map both positive and negative places and give details about what they do in these places. This paper analyses the positive place markings. The respondents also marked their home and answered questionnaires as regards to personal background. The datasets include respondents from the inner-city urban core, residential areas dominated by apartment buildings further away from the city as well as fringe areas dominated by single-family housing.

2.1.1. PPGIS survey for adults

In the fall of 2009, 10,000 invitations were sent to a random sample of adults from 11 residential areas of HMA (cities of Helsinki and Espoo). Two thousand twenty-seven residents of Helsinki and 1092 of Espoo replied to the survey. The queried themes (Fig. 2) were positive and negative places of (1) functional possibilities, (2) social life, (3) appearance and (4) atmosphere of the environment, according to the PREQ (Perceived Residential Environmental Quality) scale produced by Bonaiuto et al. (1999). (For further information on the operationalisation of the scale, see Kyttä et al., 2013.) The total number of places located by the respondents was 10,185, and of these 6381 (62.6%) were positive and included in the analysis (Fig. 2).

2.1.2. PPGIS survey for children and youth

The dataset was collected from 16 comprehensive schools in HMA in late 2011. The schools were chosen to represent different urban structures, and the age groups were fifth and eighth graders (11 and 14 years old, respectively). The data collection was organized in computer-equipped classrooms and all pupils who were present that day filled out the survey. (For further information on the data collection, see Broberg and Sarjala, 2015.) After incomplete answers were excluded, the final data set included 896 pupils, from which 672 provided input on their meaningful places on the map. Fifth graders constituted 36% of the respondents and eighth-graders 64%. Children and youth were asked to mark on a map places they like and dislike in their living environment (Fig. 2). The queried themes were positive and negative places (1) that are good or bad for doing things, (2) that have a good or bad atmosphere and (3) where you feel good or bad (Sarjala et al., 2015). In total, they pinpointed 2072 places on the map, and 1799 (86%) places they like were included in the analyses as positive places similarly to adults.

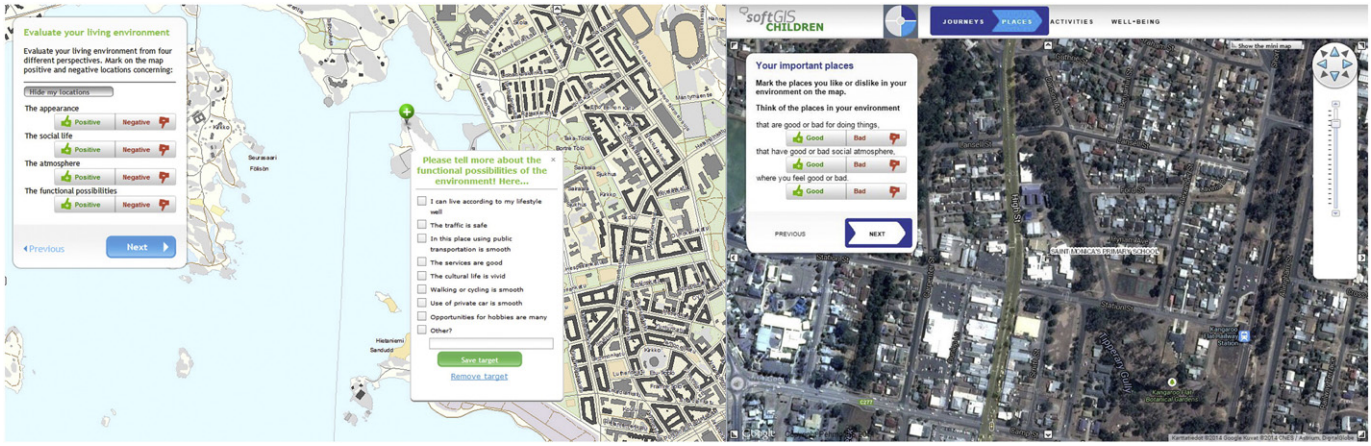

Fig. 1. The PPGIS surveys conducted in Helsinki Metropolitan Area during 2009 (left) and 2011 (right) where participants were asked to locate positive places on a map.

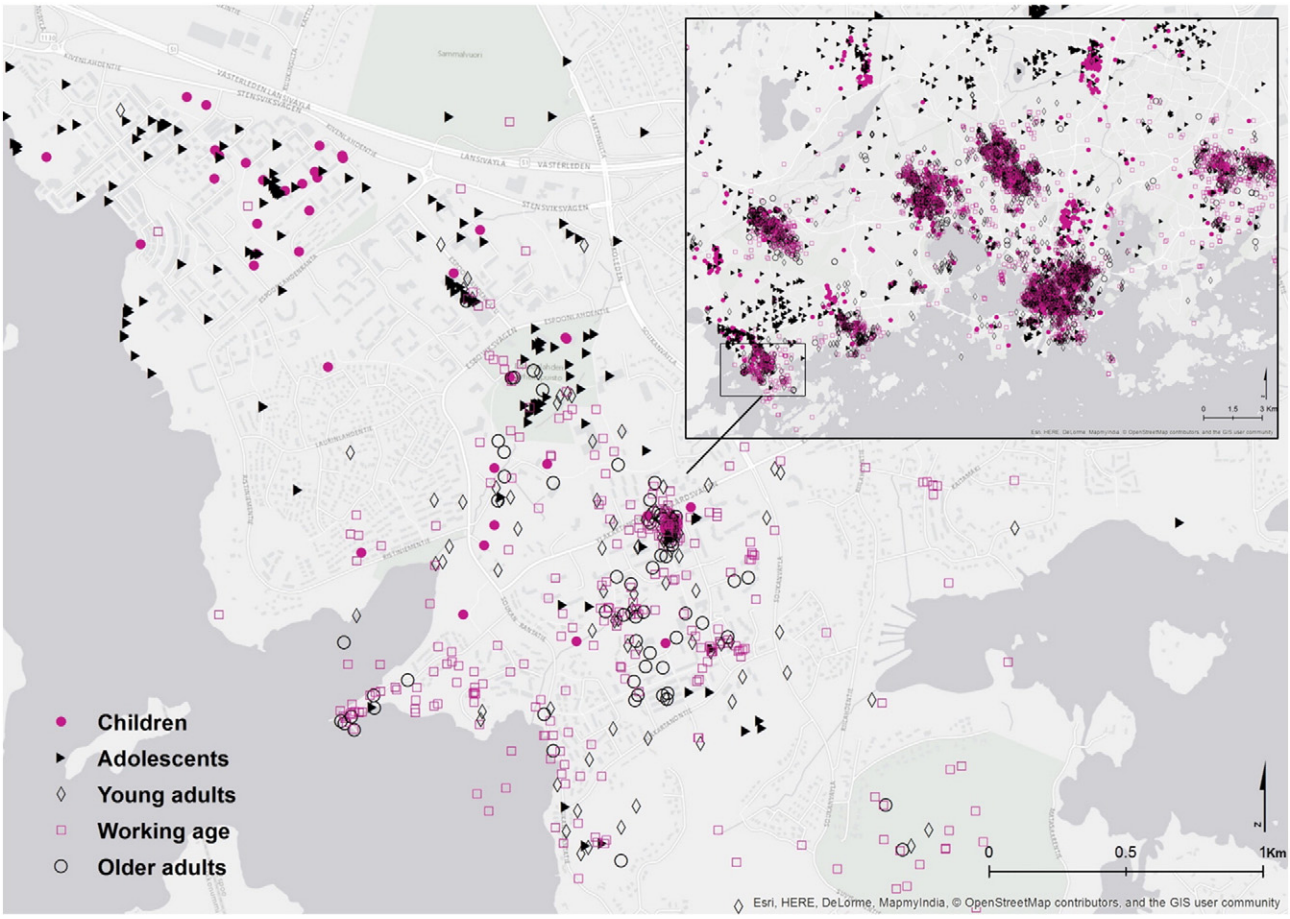

Fig. 2. The positive places located by the respondents in one neighbourhood (Espoonlahti) and in all of the neighbourhoods included in both studies within the whole study region ($N = 8180$).

2.2. Measures and analysis

The marked points were overlaid with register-based GIS data to study whether the positive places of different age groups differed in their physical structural features. Spherical buffers of 50 m were used around each place on the map. Five different age groups were formed based on the literature on life course approach (Cross and Markus, 1991; Salmela-Aro, 2009). The local context in national education system (elementary school until 12 years old), the mean age of retirement (61 years old) as well as women having their first child (29 years old) was considered when forming the age groups (OSF, 2015; Kannisto, 2016) (Table 1).

2.2.1. Physical features of the environment

The differences in the physical features were studied using a set of GIS-based variables. The variables were chosen based on their relevance in previous studies (Broberg and Sarjala, 2015; Frank et al., 2007). GIS measures used are listed in Table 2. A more detailed description of the register-based geographical datasets used in calculating these variables can be found in Kyttä et al. (2013).

Table 1
Five different age groups that were formed for age related comparisons.

Age group	Age	N	Points marked N
Children	Under 13	237	700
Adolescents	13 to 17	462	1596
Young adults	18 to 30	494	3416
Working age adults	31 to 60	822	5656
Older adults	Over 60	126	746

2.2.2. Data analysis

As the data was non-normally distributed, the nonparametric Kruskal-Wallis H test was selected to compare the age groups. The distributions of all the measured physical features for each age group were compared and assessed by visual inspection of a box plot. All showed to be similar in their shape and thus enabled the usage of the median values. The analysis focused on comparing the physical features of the positive places between the age groups. Each physical feature variable had a different amount of points as units of observations, as the comparisons took into account marked points where the physical feature was actually present (Table 3). This was done in order to create an understanding of how strongly each measured variable was present around the positive places of different age groups compared to the others. To further discover where the differences truly occur, a post-hoc test was also run. Pairwise comparisons were performed to determine where the differences between the groups lie and run using Dunn's (1964) procedure with a Bonferroni adjustment.

3. Results

The physical features of the environment differ in places found enjoyable by different age groups. Descriptive statistics of median values of the physical features and the Independent Samples Kruskal-Wallis Test Summary are presented in Table 3. Ten out of twelve measured variables showed statistically significant differences between the groups. There was no significant difference in residential land use ($\chi 2 =$

Table 2
GIS-based measures used to study the physical features of the positive places.

Variable	Type of variable	Type of measurement and calculation
1. Distance from home	Euclidean distance	Distance from home to positive places was calculated in relation to the question of accessibility. Distance from home was calculated as Euclidean distance between respondents' home and positive places.
2. Green and water	Land use	Number of green & water raster grids (10 m × 10 m) around each positive place. Spherical buffers of 50 m were created around each positive place and the amount of land use raster girds within that buffer was calculated.
3. Residential area	Land use	Number of residential area grids (10 m × 10 m) per each positive place buffer.
4. Traffic area	Land use	Number of traffic area grids (10 m × 10 m) per each positive place buffer.
5. Institutional area	Land use	Number of institutional area grids (10 m × 10 m) per each positive place buffer.
6. Office area	Land use	Number of office area grids (10 m × 10 m) per each positive place buffer.
7. Commercial area	Land use	Number of commercial area grids (10 m × 10 m) per each positive place buffer.
8. Sporting related area	Land use	Number of sporting related area grids (10 m × 10 m) per each positive place buffer.
9. Public transportation stops	Urban structure	The number of public transportation stops within each positive place buffer.
10. 4-way intersections	Urban structure	The number of 4-way intersections within each positive place buffer.
11. Housing units per hectare	Urban structure	The number of housing units per hectare within each positive place buffer.
12. Services	Urban structure	The number of services within each positive place buffer.

7.208, $p = 0.125$), however this land use was strongly present in all age groups' places (Table 3). Neither number of four-way intersections ($\chi2 = 6.176$, $p = 0.186$) showed any significant differences. Thus, these two measures were not analysed further. The post-hoc analysis revealed statistically significant differences between different age groups and is presented in Table 4 with adjusted *p*-values.

As shown in Table 3, the distance from home to positive places differed significantly across the age groups ($\chi2 = 419.38$, $p \leq 0.001$), and further post-hoc comparisons showed significant differences especially between adolescents, clearly longer distances compared to all other age groups (Table 4).

The land uses of positive places of different age groups were found to be different. The amount of sporting-related land uses differed statistically significantly ($\chi2 = 41.293$, $p \leq 0.001$) and characterized especially adolescents' and children's places compared to the other age groups (Table 4). Commercial land use ($\chi2 = 20.182$, $p \leq 0.001$) characterized all age groups' places but occurred most abundantly in adolescents' places, which were statistically significantly different from the three adult age groups (Table 4). Differences in the amounts of institutional land use ($\chi2 = 89.648$, $p \leq 0.001$) were found to be statistically significant, but further post-hoc comparisons showed the difference being significant again only between adolescents and all the other age groups, where the amount was clearly bigger for adolescents (Table 4). The institutional land use represented here were mainly schools and schoolyard surroundings, as confirmed by visual inspection. Green and water occurred most abundantly in the positive places of the three adult age groups and less in children's and adolescents' places (Table 3). The amount of green and water spaces differed significantly ($\chi2 = 133.24$, $p \geq 0.001$) especially between younger and older age groups. The amount of traffic area land use ($\chi2 = 87.315$, $p \geq 0.001$) differed significantly across the age groups. Traffic land use characterized the positive places of younger adults and working-age adult groups more than the other three age groups, and further post-hoc comparisons showed differences being significant between the two adult age groups and the two youngest groups (Table 4).

Three variables measuring the urban structure were also found different between the age groups. The median of housing units around the positive places ($\chi2 = 280.82$, $p \leq 0.001$) was highest for young (50) and working-age (36) adults and lowest for adolescents (8). The amounts differed significantly between all other age groups except children (21) and older adults (27) as well as working-age and older adults (Table 4). The medians of public transportation stops ($\chi2 = 36.234$, $p \leq 0.001$) and places offering services ($\chi2 = 19.505$, $p = 0.001$) differed significantly between the age groups, being highest for older adults and

Table 3
Median physical feature values of different age groups. Instead of the median number of land use raster grids per buffer the land uses (2 to 8) are reported as median percentage (%).

		Children (591 points in total)	Adolescents (1343 points in total)	Young adults (2116 points in total)	Working age (3546 points in total)	Older adults (507 points in total)	Total # UO	χ2	df	*p*
1. Distance from home (m)	# UO	591	1343	2116	3546	507	8103	419.38	4	<0.001
	Median	434.7	1165.2	522.4	464.7	406.3				
2. Green and water	# UO	306	675	1139	2064	300	4484	133.24	4	<0.001
	Median	12.0	16.0	27.0	31.0	32.0				
3. Residential	# UO	328	567	1067	1736	226	3944	7.208	4	Ns
	Median	24.0	25.0	21.0	23.0	18.0				
4. Traffic	# UO	402	808	1444	2274	340	5268	87.315	4	<0.001
	Median	9.0	9.0	14.0	13.0	11.0				
5. Institutional	# UO	112	236	271	402	78	1099	89.648	4	<0.001
	Median	15.0	35.0	12.0	11.0	12.5				
6. Office	# UO	18	56	144	163	19	400	13.418	4	0.009
	Median	12.0	12.0	7.0	6.0	13.0				
7. Commercial	# UO	50	217	244	357	54	922	20.182	4	<0.001
	Median	37.0	39.0	31.0	32.0	29.0				
8. Sports related	# UO	112	181	168	293	37	791	41.293	4	<0.001
	Median	30.0	39.0	18.5	24.0	24.0				
9. # public transportation stops	# UO	52	138	344	453	56	1043	36.234	4	<0.001
	Median	1.0	1.0	2.0	2.0	2.0				
10. # 4-way intersections	# UO	105.0	207.0	522.0	737.0	105.0	1676	6.176	4	Ns
	Median	1.0	1.0	1.0	1.0	1.0				
11. # housing units	# UO	341	579	1082	1694	214	3910	280.82	4	<0.001
	Median	21.0	8.0	50.0	36.0	27.0				
12. # services	# UO	168	320	731	1006	143	2368	19.505	4	0.001
	Median	2.0	2.0	3.0	3.0	4.0				

= number of, UO = points as units of observation.

Table 4
The median physical feature values of the age groups and the results of the post hoc analysis between the groups.

Distance from home (m)	Median	Children	Adolescents	Young adults	Working age	Older adults	Commercial	Median	Children	Adolescents	Young adults	Working age	Older adults
		434.7	1165.2	522.4	464.7	406.3			37.0	39.0	31.0	32.0	29.0
Children	434.7	–	<0.001	ns	ns	ns	Children	37.0	–	ns	ns	ns	ns
Adolescents	1165.2		–	<0.001	<0.001	<0.001	Adolescents	39.0		–	0.004	0.002	0.026
Young adults	522.4			–	0.042	ns	Young adults	31.0			–	ns	ns
Working age	464.7				–	ns	Working age	32.0				–	ns
Older adults	406.3					–	Older adults	29.0					–
Green space and water	Median	Children	Adolescents	Young adults	Working age	Older adults	Sports related	Median	Children	Adolescents	Young adults	Working age	Older adults
		12.0	16.0	27.0	31.0	32.0			30.0	39.0	18.5	24.0	24.0
Children	12.0	–	ns	<0.001	<0.001	<0.001	Children	30.0	–	ns	ns	ns	ns
Adolescents	16.0		–	<0.001	<0.001	<0.001	Adolescents	39.0		–	<0.001	<0.001	0.048
Young adults	27.0			–	ns	ns	Young adults	18.5			–	ns	ns
Working age	31.0				–	ns	Working age	24.0				–	ns
Older adults	32.0					–	Older adults	24.0					–
Traffic		Children	Adolescents	Young adults	Working age	Older adults	# public transportation stops		Children	Adolescents	Young adults	Working age	Older adults
	Median	9.0	9.0	14.0	13.0	11.0		Median	1.0	1.0	2.0	2.0	2.0
Children	9.0	–	ns	<0.001	<0.001	0.023	Children	1.0	–	ns	0.026	0.001	ns
Adolescents	9.0		–	<0.001	<0.001	ns	Adolescents	1.0		–	0.005	<0.001	ns
Young adults	14.0			–	ns	ns	Young adults	2.0			–	ns	ns
Working age	13.0				–	ns	Working age	2.0				–	ns
Older adults	11.0					–	Older adults	2.0					–
Institute	Median	Children	Adolescents	Young adults	Working age	Older adults	# housing units	Median	Children	Adolescents	Young adults	Working age	Older adults
		15.00	35.00	12.00	11.00	12.50			21.0	8.0	50.0	36.0	27.0
Children	15.0	–	<0.001	ns	ns	ns	Children	21.0	–	<0.001	<0.001	0.001	ns
Adolescents	35.0		–	<0.001	<0.001	<0.001	Adolescents	8.0		–	<0.001	<0.001	<0.001
Young adults	12.0			–	ns	ns	Young adults	50.0			–	<0.001	<0.001
Working age	11.0				–	Ns	Working age	36.0				–	ns
Older adults	12.5					–	Older adults	27.0					–
Office	Median	Children	Adolescents	Young adults	Working age	Older adults	# services	Median	Children	Adolescents	Young adults	Working age	Older adults
		12.0	12.0	7.0	6.0	13.0			2.0	2.0	3.0	3.0	4.0
Children	12.0	–	ns	ns	ns	ns	Children	2.0	–	ns	0.002	0.004	0.002
Adolescents	12.0		–	ns	0.013	ns	Adolescents	2.0		–	ns	ns	ns
Young adults	7.0			–	ns	ns	Young adults	3.0			–	ns	ns
Working age	6.0				–	ns	Working age	3.0				–	ns
Older adults	13.0					–	Older adults	4.0					–

lowest for children and adolescents. Further comparisons showed the difference of services being statistically significant only between children and the three adult age groups (Table 4).

4. Discussion

The place-based approach of this study provided insights into which kinds of outdoor environments individuals of different age groups choose to go to and spend their time in. It also offered a possibility of identifying whether different age groups favour different types of physical environments. As hypothesized, places perceived as being positive differ in their physical environment among age groups. This supports the idea that the configuration of an environment per se might not guarantee its popularity across the age groups, and that it is not necessarily only the nearest park that motivates all people to go out (Golicnik and Ward Thompson, 2010; Laatikainen et al., 2015).

The number of green and blue spaces in the positive places of the three adult age groups affirms previously found results regarding the meaning and importance of green and blue spaces in urban spaces and for urban residents (Kyttä et al., 2013; Tyrväinen et al., 2014). However, somewhat contrary results were also found: green and blue spaces were not as present in children's and adolescents' places. The strong focus on the provision of parks and green spaces for recreational and PA-related usage is challenged based on these findings along with Wheeler et al. (2010), who found similarly that as little as 7 to 9% of children's daily physical activity happened in parks.

The longer distances of adolescents and shorter distances of the two adult age groups to the positive places can possibly be explained by schedule constraints for the two adult groups who are still actively working or studying. For children, the difference may be related to parental restrictions of independent mobility that are usually alleviated with increasing age and mirrored in the growing territorial range. (See Carver et al., 2014.) However, the distance was shortest for older adults, and the territorial range could also be studied during and after a transition to retirement and older adulthood. The results suggested that positive places of older adults are in close proximity to home and strongly characterized by green spaces. Thus, providing green spaces, and other destinations older adults visit (Hirsch et al., 2016) in rather close proximity to older adults' homes, or providing housing for older adults in close proximity to green spaces, might be a strategy for planners to create environments accessible by foot and thus potentially enhance well-being and PA (Ward Thompson et al., 2012).

For children and adolescents, sporting-related land uses were more dominant compared to adult groups. This can possibly be explained by the importance and strong presence of hobbies in their daily lives (Larson and Verma, 1999). It is interesting that sporting-related land uses were not as present in the three adult age groups' places compared to those of younger age groups, especially from the well-being and PA-promotion point of view. Combining green spaces and sporting-related land uses by bringing sport functions, such as exercise, and sport equipment to green areas and introducing play equipment in commercial environments could be fairly easy steps towards leisure-time PA promotion that takes into account various user groups.

Institutional land use was very dominant and strongly represented in adolescents' places as compared to the other four age groups. Institutional land use in this case meant schoolyards and their immediate surroundings, suggesting that adolescents perceive the school environment as a positive place. The presence of schoolyards may also

be related to their wide free-time usage among adolescents as well as to sharing school recreational facilities with the community, which is a common practice in the study area. The large presence but relatively minor differences in commercial land uses was a rather expected result. The importance of commercial spaces and shopping malls for spending free time for various age groups has been shown in previous studies (Matthews et al., 2000; Winters et al., 2015) and the observed number of services and high amount of commercial land use further supports this finding. The median of services was highest for the older adult age group, which is similar to findings from a study by Aspinall et al. (2010).

Interestingly, traffic areas were prevalent in the positive places of young and working age adults as compared to the other three age groups. As traffic areas are mainly places for moving around and even being noisy and somewhat unsafe, it raises a question regarding their presence in the positive places of young and working-age adults. This can likely be explained by the mixed-use urban spaces and the vertical stratification of different functions in the urban space. The median of housing units was also significantly higher for young and working-age adults, which supports this assumption. The urban space in the study area and in European cities in general is mixed with different functions in the inner-city urban core and often in residential areas dominated by apartment buildings. These mixed-use areas are kind of vertical interfaces of traffic areas, pedestrian streets, street-level commercial and social spaces and upper-floor residential spaces. The true character of such areas cannot be understood by analysing only the land uses.

5. Limitations

The data did not include small children, as the youngest respondents were 10 years old, which can be seen as a limitation. However, children's environments have been widely studied elsewhere (Kyttä, 2002). Another limitation could be identified from the number of intersections as well as public transportation stops results. Given the strong urban context, it was unexpected that the number of intersections and public transportation stops would be so low. This might be a result of the chosen unit of analysis, the 50-meter buffer. Even if it is a valid unit of analysis for the immediate surroundings of places marked on a map as shown in previous studies (Sarjala et al., 2015), it might not be the most suitable scale for analysing the transportation network around marked places, given the city block sizes that are rarely very short. As only part of the study sample was based on random sampling and the study concentrates on a single metropolitan region, the generalizability of the results should be carefully considered when taking the discussion forward. However, the studied region represents various urban settings, respondents and urban characteristics analysed. This study looked different age groups from a spatial perspective, but it should be acknowledged that other factors such as job, family situations and socioeconomic status also play a role in individuals' perceptions. This study focused on analysing the land uses and a few urban structural characteristics, which can be identified as a limitation to truly recognizing the functional characteristics of marked places. The dataset for land use analysis might have also exaggerated the number of street areas and thus distorted the importance of the traffic areas. Future studies should try to overcome these limitations by diversifying the methods of analysing spatial data.

6. Conclusions

While it is widely acknowledged that perceived urban environmental quality is associated with health and well-being, we do not know enough about which types of urban environments are perceived as enjoyable by urban dwellers of different age groups. This study gives intriguing insights about the places used and perceived as being positive by different age groups. Adult age groups' places were characterized by green, blue and commercial spaces, whereas sports, residential and commercial land uses characterize children's and adolescents' positive places. Adolescents' places were the most distant while older adults' positive places were found to be closest to home. The results illustrate which characteristics of the environment could motivate people of different age to go out in their everyday living environments.

The characteristics of positive places were found to be different across the age groups. However, the true characteristics of the built environment in mixed-use environments, such as dense urban centers, are hard to capture with current methods used in place-based studies and might set limitations to truly recognizing the functional characteristics of the built environment. Creating motivating environments for all age groups in one setting remains problematic but should nevertheless be strived for, especially in the urban context, where a constant competition over different usages of space occurs. Health-promoting elements should be included in many different environments actively used by urban dwellers. The study showcased the relevance of including a life-course and place-based perspective in studies on urban environmental quality as well as to the field of active living research.

Conflict of interest

The authors declare that there are no conflicts of interests.

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