Analyzing Factors for an Optimum Play Environment

Through Children's Subjective Well-Being Indicators

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Abstract

Children's play environments are linked to their subjective well-being (SWB), but this has not been thoroughly studied. This article has three aims: to identify factors that can ensure an optimum play environment in relation to children's SWB; to analyze the most relevant groups of children that share similar play environments; and to focus on social inequality according to gender, background, and conditions of poverty and disability. The cluster analysis was performed using the indicators included in the Children's Worlds international research project, and the participants comprised 3,962 children living in Barcelona (Spain) in 2017 (mean age=10.7). About the results, most children reported four overall lacks: of age-appropriate rest, of being freedom from peer discrimination, of feeling safe within the local neighborhood, and of having enough freedom of choice. On the positive side, children displayed low stress and boredom, high satisfaction with their free time, and reported being able to spend time or play outside almost every day, all of which contributing to a high SWB. Girls, children living in poverty or from foreign geographical or cultural backgrounds experienced this in a lesser extent. The conclusions contribute new knowledge to psychosocial interventions to improve children's play environments and well-being.

Keywords: play environment; children's subjective well-being; children's rights; social inequality; Children's Worlds

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1. Introduction and theory

1.1. A child's right to play and how it relates to children's subjective well-being (SWB)

Article 31 of the United Nations Convention on the Rights of the Child (UNCRC) states that 'States Parties recognize the right of the child to rest and leisure, to engage in play and recreational activities appropriate to the age of the child, and to participate freely in cultural life and the arts' (United Nations, 1989). Accordingly, the Child Friendly Cities Initiative already recognized the child's right to play as fundamental to the fullest implementation of the UNCRC, whether it was from the 'places for children' (homes, schools, and recreational institutions) or the 'children's places' (informal places usually in their local areas) (Rasmussen, 2004; UNICEF Office of Research-Innocenti, 2004). Furthermore, General Comment Number 17 (United Nations, 2013) encourages the provision of the necessary and appropriate preconditions and opportunities for fulfilment of Article 31, ensuring an optimum play environment. A child is considered to have an optimum play environment when they are free from stress, can move around freely and safely within their local neighborhood, have space and opportunities to play outdoors, and opportunities to participate with other children in games, sports or other recreational activities (for a complete definition, see Table 1). Groups of children who require special attention in order to protect their rights under Article 31 are girls, children from minority backgrounds, children living in poverty, and children with disabilities. Although the UNCRC is intrinsically linked to the well-being of children, the convention itself does not directly ensure it. This is because the UNCRC is not sufficiently implemented, given that more attention needs to be paid to factors such as the settings in which children live, study, and play (Lundy, 2014; Mekonen & Tiruneh, 2014; Melton, 2014).

Thus, the conditions for an optimum play environment also contribute to the 2030 Sustainable Development Goals (SDG), especially regarding health and well-being, and sustainable cities and communities (United Nations, 2015).

There is growing evidence that satisfying leisure activities contribute to children's SWB (Malo, Viñas, González-Carrasco, Casas, & Alsinet, 2018; Rees, 2017a, 2018; Sarriera et al., 2014; Adams & Savahl, 2017; Savahl et al., 2019), although not much of the research on children's SWB has focused specifically on play environments. Among the exceptions, Van Gils (2014) showed that conditions encouraging or inhibiting children's play can be correlated with children's SWB. This is based on the approach that play is related to developing various qualities (the developmental approach), but also enjoying life, or being creative without a productive aim (the cultural approach). In a broad context and in various ways, children's play affects sensory and motor development and physical health, emotional and psychological development, development of sociability and self (or identity), and cognitive development and learning. In this regard, children's SWB is usually defined as the set of cognitive and affective evaluations that children make regarding their lives, the circumstances affecting their lives and the context in which they live (Savahl, 2017). Children's SWB can therefore have no expression or enhancement without considering the place where interactions occur: whether this means enjoying an overall balance of positive over negative affective evaluations, fulfilling potential and expressing autonomy, or utilizing a range of social, material, and psychological resources; it is necessarily emergent in relation to a certain place or local area (Atkinson, Fuller, & Painter, 2012).

Children are considered knowledgeable actors in relation to their SWB and, in the context of research on play, it is claimed that the best understanding of play is from their own perspective. Although case studies and qualitative research have already been conducted, quantitative research approaches surveying children about their play environments would also

be valuable in this respect (Evans & Horton, 2016; Holloway & Valentine, 2000; Woodyer, Martin, & Carter, 2016). For example, Hart et al. (1996) concluded that providing children with different opportunities or forms of exploration and self-expression has positive effects on their development of self-concept and identity, their autonomy, social competence and social responsibility, community identity and development, and self-determination. Moreover, the International Play Association recommends recognizing global and local frames of reference in children's play. This is what Roland Robertson termed *glocalization* in 1995, the fusion of universal and localized trends in the continual creation of new realities of children's play (McKendrick, Loebach, & Casey, 2018a, 2018b).

1.2. What do we know about children's play in public spaces and SWB in the local context of Barcelona?

In line with previous arguments for different locally-sourced research, children's play in public spaces in the local context of Barcelona (Spain) requires further elaboration given the focus of the study. For example, the '2030 Plan for play in Barcelona public spaces', with context-specific development in poorer areas of the city, has three strategic axes: 1) to develop more and better play spaces in the urban environment (play infrastructure); 2) to stimulate street and outdoor leisure and physical activity (play uses); and 3) to promote a paradigm shift and give play momentum in the city (Barcelona City Council, 2019b, 2019c). Apart from leisure areas (such as parks and squares) and school environments (including playgrounds), there are 865 exclusive play areas for children under 12, having a mean surface area of 176 m^2. Furthermore, 99% of children have a play area within 10 minutes walking distance of their home, and 74% of play areas are within 5 minutes walking distance from a school. However, according to the current research, almost 2 out of 10 children aged 10-12 say they do not have an outdoor space close to home in which to play safely, around half think there are not enough spaces to play and have fun in their neighborhood, and almost 4

out of 10 do not play or spend enough time outdoors (2 days a week or less) (Barcelona City Council, 2018; Cortés & Truñó, 2019).

Furthermore, although studies have been conducted on play in public spaces in Barcelona, none have specifically analyzed children's SWB. Research has already been conducted on the importance of exposure to green spaces for neurological, cognitive and behavioral development (Amoly et al., 2015; Dadvand et al., 2015, 2018, 2017), as well as the way in which children and adolescents use, adopt, and choose public spaces to play in the city. Martori, Apparicio, and Séguin (2019) used spatial modelling and the '2030 Plan for play in Barcelona public spaces' to conclude that there are no important spatial disparities in terms of access to children's playgrounds in Barcelona, although they recommended increasing the number of playgrounds in areas with low income populations to reduce potential congestion, giving concrete examples of districts or areas to be improved.

In addition, Pinheiro de Almeida, and Gonçalves Siebra (2015) conducted a qualitative study in three squares of one Barcelona district using non-participant observations and structured questionnaires administered to 8-12 year-olds, and noted that children and preteens value having larger play spaces, other children to play with, and play options that enhance their motor skills, among other aspects. Furthermore, Guitart Ortiz, Prats Ferret, and Baylina Ferré (2014) used a qualitative and inclusive methodological approach in a different Barcelona neighborhood with 14-15 year-old participants, and found that adolescents prefer public spaces with spacious new buildings and modern designs, based on what they can do there and because they are less frequented by adults, giving them peace and privacy. Moreover, they found that girls' use of public space is more restricted than that of boys.

From a gender perspective, Pérez-Tejera, Valera, and Anguera (2018) used systematic observation and polar coordinate analysis of relationships throughout Barcelona, and found that there are gender and cultural differences in the everyday use of open public spaces:

women tend to take on traditional gender roles (being more engaged in caregiving roles with children and elders than in any other given activity, or with people of their same age group). They also found that women from minority backgrounds make less use of parks. Pérez del Pulgar, Anguelovski, and Connolly (2020) used ethnographic and archival analysis in two new parks in two different districts of Barcelona and found that historical social inequality could be remediated by using green spaces to produce socio-natures and relational well-being.

1.3. Main aims

The aim of this article is to consider children's right to play and its connection with children's SWB. This involves analyzing certain factors identified by General Comment Number 17 for an optimum play environment from an adapted version of the third wave of the International Survey of Children's Well-Being, promoted by the Children's Worlds project (Andresen et al., 2020; Rees, 2017b). Given the academic interest in children's play environments and the scarcity of academic articles focusing on children's SWB indicators derived from quantitative approaches, this article intends to share results and discussions from a local context to contribute to the global and international perspective. Collecting population-based quantitative data through surveys can offer new approaches for learning about and improving children's play environments in a systematic way. This study focuses on factors relating to children's play environments using SWB indicators and has been developed with available local data, but could be replicated in local contexts in other countries for a comparative and improved vision. This step may be possible using the surveys applied worldwide by the third wave of the Children's Worlds international research project.

The main aim of this article is to identify the conditions or factors that ensure an optimum play environment in connection with children's SWB and related indicators (about interpersonal relationships and participation in activities). The second aim is to analyze the most relevant groupings of children that share a similar play environment in order to better

understand the nature of and connections found in children's engagement in play. And, finally, the third aim, which concerns those groups of children that require special attention (vulnerable children), is to focus on social inequality analyzing the most relevant groups of children that share similar play environments by gender, background, and the conditions of poverty and disability.

2. Material and methods

2.1. Participants

Children aged 10-12 participated in a cross-sectional survey: an adapted version of the third wave of the Children's Worlds questionnaire. Data collection took place in Barcelona (Spain) in 2017 as part of the 'Children Have Their Say: Children's SWB in Barcelona' program (Barcelona City Council, 2017). it comprised a school-based probabilistic sample of pupils from the last two years of primary education: Year 5 and 6. A total of 3,962 questionnaires (mean age=10.74, *sd*=.68) from 52 schools (170 different classrooms) were analyzed. The type of cluster sampling corresponded to a two-stage sample with prior stratification by educational district and type of school: schools were selected randomly in the first stage, and classrooms in the second one (when a school had one or two classrooms per year, all were selected; and when there were more than two classrooms per year, two per year were selected randomly). Guidelines for ethical research with children were followed. A stable and coordinated fieldwork team of four interviewers (usually three in each session) led the data collection sessions, taking responsibility for the technical aspects of online surveys administered to classrooms of children in schools, as well as ensuring active listening, reading comprehension, and providing emotional support. There were no financial or material rewards for schools or families. Although, under current regulations, informed family consent was not required, as the research was promoted by the public administration, families were still informed and given the option to refuse their child's participation.

Gender and children from minority backgrounds (birth/origin). Regarding gender, 49.43% of participants were girls and 50.57% boys, an equivalent proportion to the target population. As for origin, 90.23% were born in Spain (75.13% of whom had two parents born in Spain), and 9.77% were born abroad (75.42% of whom had two parents born abroad).

Children living in poverty: Family affluence and neighborhood income. Family affluence was based on the collation of responses to six items: number of cars owned, having an individual bedroom, number of computers, number of bathrooms, having a dishwasher, and number of holidays abroad last year (Boyce, Torsheim, Currie, & Zambon, 2006; Currie et al., 2008). A total between 0 and 4 (9.81%) was considered low family affluence; from 5 to 9 (67.53%), medium family affluence; and from 10 to 13 (22.66%), high family affluence.

Neighborhood income is a constructed variable that was created from the intersection between 'What neighborhood do you live in?' and the 'Family Income Index', an indicator of the mean income level of residents in the 73 neighborhoods of Barcelona (Barcelona City Council, 2019a). All children were able to report their neighborhood because the fieldwork team help them: individually, each child verbally said their postal address, an interviewer searched the related neighborhood via an electronic tablet, and then each child select their neighborhood in the drop-down list of the last question of the survey (no postal address was registered for data protection compliance). The index source establishes a set of thresholds, according to which, 46.73% of the children were from lower income neighborhoods, 39.42% were from medium income neighborhoods, and 13.85% were from higher income neighborhoods. The mean difference in family affluence by neighborhood income is significant at a level of 0.01 (children from neighborhoods with low income: mean=6.98, *sd*=2.15; medium: mean=7.78, *sd*=2.05; high: mean=8.99, *sd*=1.94).

Children with disabilities: Perceived special needs. 22.31% of the children felt they had at least one personal difficulty or special need. Of these, 3.91% expressed 'having a major

visual or auditory difficulty, or some kind of malformation' (needing glasses excluded), 7.81% 'having a learning difficulty' (for example, dyslexia, attention deficit, hyperactivity), and 14.15% 'having a long-term illness' (for example, diabetes, an allergy, asthma, growth delay, epilepsy). Children who self-reported special needs reported having had headaches, stomachache, back pain, or insomnia more frequently than the other children in the sample in the previous six months.

2.2. Instruments and procedure

The starting point for evaluating the context for fulfilling children's right to play in relation to their SWB was the set of 13 factors identified by General Comment Number 17 for an optimum play environment. Subsequently, each factor was conceptually associated with 25 indicators from an adapted version of the third wave of the Children's Worlds questionnaire. These indicators were related to domain-based cognitive SWB, affective SWB, interpersonal relationships and participation in activities outside school. Table 1 relates each factor with the available indicators; however, three factors (9, 11, and 13) do not have available indicators because there is not any related item in the used questionnaire.

Table 1

Factors for an optimum play environment and proposed indicators

FACTOR	INDICATOR
1. Freedom from stress.	1.1. Feeling stressed [a] 1.2. Feeling bored [a]
2. Freedom from social exclusion, prejudice or discrimination.	2.1. If I have a problem at school other children will help me [b] 2.2. I have enough friends [b]
3. An environment secure from social harm or violence.	3.1. How often are there fights between children in your school? [c] 3.2. How often are there fights between people in your local area? [c]
4. An environment sufficiently free from waste, pollution, traffic and other physical hazards to allow them to circulate freely and safely within their local neighborhood.	4.1. I feel safe when I walk around in the area I live in [b] 4.2. How satisfied are you with the area where you live? [d]

5. Availability of rest appropriate to their age and development.	5.1. Doing nothing or resting -apart from sleeping at night- [e] 5.2. Relaxing, talking or having fun with family [e] 5.3. Doing homework and studying [e] 5.4. Doing extra classes / tuition when not at school [e]
6. Availability of leisure time, free from other demands.	6.1. How satisfied are you with how you much free time you have to do what you want? [d] 6.2. How satisfied are you with how you use your time? [d] 6.3. Watching TV [e]
7. Accessible space and time for play, free from adult control and management.	7.1. In my area there are enough places to play and have a good time [b] 7.2. Playing electronic games -on a computer or other device- [e]
8. Space and opportunities to play outdoors unaccompanied in a diverse and challenging physical environment, with easy access to supportive adults, when necessary.	8.1. Is there a place in your home or very near it where you can play safely outside? [f] 8.2. Playing or spending time outside [e]
9. Opportunities to experience, interact with and play in natural environments and the animal world.	Not available
10. Opportunities to invest in their own space and time so as to create and transform their world, using their imagination and languages.	10.1. My parents give me enough freedom [b] 10.2. I have enough choice about what I do at school [b] 10.3. I have enough freedom to do what I want in my local area [b]
11. Opportunities to explore and understand the cultural and artistic heritage of their community, participate in, create and shape it.	Not available
12. Opportunities to participate with other children in games, sports and other recreational activities, supported, where necessary, by trained facilitators or coaches.	12.1. How often do you see your friends -not including when you are at school- [e] 12.2. Playing sports or doing exercise [e] 12.3. Using social media -on a computer, tablet or phone- [e]
13. Recognition by parents, teachers and society as a whole of the value and legitimacy of the rights provided for in article 31.	Not available

Note. a (frequency scale where 0 indicates not at all and 10 indicates all the time, over the last two weeks); b (agreement scale with five options where the minimum represents 'I do not agree' and the maximum represents 'I totally agree'); c (frequency scale with four options where the first represents 'Every day' and the last represents 'Less often than that'); d (satisfaction scale where 0 represents not at all satisfied and 10 represents completely

satisfied); e (frequency scale with six options where the first represents 'Never' and the last represents 'Every day'); f (yes/no/not sure options).

Moreover, the Children's Worlds Subjective Well-Being Scale (CW-SWBS) was also used, based on the Students' Life Satisfaction Scale (Huebner, 1991). This scale measures context-free SWB through an 11 point-scale, where 0 represents 'do not agree at all' and 10 represents 'totally agree'. Confirmatory Factor Analysis using the original seven items did not return a good enough fit [χ^2=1072.611, df=14, CFI=.951, RMSEA=.138 (.131–.145)]. When items 6 ('I enjoy my life') and 7 ('I am happy with my life') were excluded, the resulting reduced version displayed good fit indices [χ^2=21.107, df=3, CFI=.999, RMSEA=.039 (.024–.055)], which is the version used here. The CW-SWBS-5 showed an excellent internal consistency (α=.916), and a similar mean and distribution for its items. The overall mean for the psychometric scale was 8.97 (sd =1.34), the median was 9.4, and the 5th percentile was 6.2. Regarding validity, the CW-SWBS-5 showed an acceptable correlation of .689 with the Overall Life Satisfaction single-item indicator, and a moderate correlation with 'I feel positive about my future' (.559) and 'How satisfied are you with what may happen later in your life?' (.451).

2.3. Data analysis

IBM SPSS 25.0 was used. In accordance with Hair, Tatham, Anderson, and Black (1999), firstly, a brief descriptive analysis of the indicators was conducted. Following this, a cluster analysis was performed to identify homogenous groups of cases within the indicator data, as the grouping or structure was not previously known. The method chosen for cluster analysis was updated K-means, since it can be used to test a different number of models or prototypes. A set of three clusters was adopted, since using two clusters is too generic, and more clusters do not offer practical information, as there can be too many similar central responses between clusters, as well as resulting in cluster sizes that are statistically too small.

The number of iterations was 1, and the convergence criterion was 0.5. Cluster membership and distances between final cluster centers were available (1-2: 7.606; 1-3: 6.043; 2-3: 5.873). Missing data was not excluded or imputed. Moreover, the differences in CW-SWBS-5 results were checked for the analyzed clusters. Finally, Chi-Square Tests were applied to the analyzed ex post facto variables (see Participants section).

3. Results

3.1. Children's play environments indicators

Descriptive statistics of children's SWB and related indicators alongside their means and standard deviations are shown in Table 2. According to the distribution of results, 30% of surveyed children were quite stressed, and 22% were quite bored (responses from 7 to 10). Almost half of the children (46%) did not totally agree that other children would help them if they had a problem at school, and a little over a quarter (27%) did not totally agree that they had enough friends. More than a third (37%) answered that there were frequent fights between children in their school, and 12% answered that there were frequent fights between people in their local area (responses of almost every day and every day). Almost half (49%) did not totally agree with feeling safe walking around their local area, and 34% were not sufficiently satisfied with their local area (responses of 8 or lower). More than two thirds (69%) reported insufficient rest and 26% having fun with their family infrequently (two days per week maximum), whereas 73% reported doing schoolwork and 12% doing extra classes five days per week minimum.

Moreover, 52% were not sufficiently satisfied with their amount of free time, and 40% were not sufficiently satisfied with how they spent their time, whereas 65% frequently watched television. Almost half of the children (46%) did not totally agree that there were enough places in their local area to play and have a good time, and 37% played computer games frequently. Almost two out of every ten children (18%) said they did not have a space

close by to play safely outside, and 43% played outside infrequently. Almost half (53%) did

not totally agree that their parents gave them enough freedom, 71% did not totally agree that

they had enough choice about what to do at school, and 67% did not totally agree that they

had enough freedom to do what they want in their local area. Finally, outside school, 67%

saw their friends, 32% played sports, and 37% used social media infrequently.

Table 2

Descriptive statistics of children's SWB and related indicators

INDICATOR	n	Min. to max.	Mean	Std. Deviation
1.1. feeling stressed	3,934	0 to 10	4.14	3.353
1.2. feeling bored	3,937	0 to 10	3.58	3.256
2.1. classmate support	3,878	1 to 5	4.35	0.859
2.2. enough friends	3,920	1 to 5	4.61	0.773
3.1. school fights	3,614	1 to 4	2.80	0.998
3.2. local area fights	2,264	1 to 4	3.58	0.806
4.1. safe local area	3,915	1 to 5	4.23	0.968
4.2 local area satisfaction	3,954	0 to 10	8.67	1.794
5.1 resting	3,924	1 to 6	2.90	1.753
5.2. fun with family	3,922	1 to 6	4.58	1.467
5.3. schoolwork	3,929	1 to 6	5.11	1.163
5.4. extraclasses	3,928	1 to 6	2.34	1.601
6.1. free time satisfaction	3,933	0 to 10	7.84	2.260
6.2. use of time satisfaction	3,923	0 to 10	8.59	1.545
6.3. TV	3,926	1 to 6	4.78	1.491
7.1. local area spaces	3,907	1 to 5	4.14	1.166

7.2. computer games	3,929	1 to 6	3.75	1.718
8.1. safe play outdoor space	3,665	0 to 1	0.82	0.384
8.2. outdoor play	3,929	1 to 6	4.13	1.526
10.1. parent freedom	3,863	1 to 5	4.16	0.987
10.2. school freedom	3,723	1 to 5	3.74	1.130
10.3. local area freedom	3,786	1 to 5	3.66	1.267
12.1. being with friends	3,922	1 to 6	4.30	1.485
12.2. sports	3,927	1 to 6	4.08	1.819
12.3. social media	3,954	1 to 6	3.06	1.540

3.2. The three most relevant children's play environments and their SWB

Table 3 displays the results of the cluster analysis and the three groups or clusters of children that share a similar play environment related to children's SWB: the first cluster includes 1,975 children (50% of the total sample), the second cluster 1,138 (29%), and the third 849 (21%). Note that the analysis of variance in the results is coherent with cluster centers for each indicator and the subsequent differentiation (F indicator was higher when there were different central responses for each cluster and lower when these were equal).

There are four indicators with different central responses for each cluster of children: 'feeling stressed', 'feeling bored', 'free time satisfaction' and 'outdoor play' indicators. Children in the first cluster displayed low levels of stress and boredom (central responses=2), high levels of satisfaction with their free time (central response=9), and usually play or spend time outside five or six days a week (central response=5). Children in the second cluster displayed middling levels of stress and boredom (central responses=7), medium satisfaction with their free time (central response=8), and reported playing or spending time outside three or four days a week (central response=4). Children in the third cluster displayed low levels of

stress and boredom (central responses=6 and 3, respectively), low satisfaction with their free time (central response=6), and reported playing or spending time outside once or twice a week (central response=3).

There were four specific indicators for which the central response results for the first cluster were higher than for the second and third clusters (see central responses in Table 3 for 'classmate support', 'local area satisfaction', 'use of time satisfaction', and 'being with friends' indicators). There was one specific indicator where the central response results for the second cluster is lower than for the first and third groups (see central responses in Table 3 for 'local area fights' indicator). And there were another eight specific indicators where the central response results for the third cluster were lower than for the first and second clusters (see central responses in Table 3 for 'enough friends', 'resting', 'fun with family', 'TV', 'computer games', 'school freedom', 'local area freedom', and 'sports' indicators). In addition, there were eight indicators with the same central response results in each cluster (see central responses in Table 3 for 'school fights', 'safe local area', 'schoolwork', 'extraclasses', 'local area spaces', 'safe play outdoor space', 'parent freedom', and 'social media' indicators).

Table 3

Cluster centers of the three identified clusters

	1 (n=1,975)	2 (n=1,138)	3 (n=849)	F	Sig.
1.1. feeling stressed	2	7	6	1230.215	0.000
1.2. feeling bored	2	7	3	3077.114	0.000
2.1. classmate support	5	4	4	115.378	0.000
2.2. enough friends	5	5	4	97.194	0.000
3.1. school fights	3	3	3	20.998	0.000

3.2. local area fights	4	3	4	10.049	0.000
4.1. safe local area	4	4	4	126.296	0.000
4.2 local area satisfaction	9	8	8	144.634	0.000
5.1 resting	3	3	2	39.487	0.000
5.2. fun with family	5	5	4	272.017	0.000
5.3. schoolwork	5	5	5	15.678	0.000
5.4. extra classes	2	2	2	1.949	0.143
6.1. free time satisfaction	9	8	6	824.464	0.000
6.2. use of time satisfaction	9	8	8	325.639	0.000
6.3. TV	5	5	4	54.190	0.000
7.1. local area spaces	4	4	4	106.596	0.000
7.2. computer games	4	4	3	76.111	0.000
8.1. safe play outdoor space	1	1	1	28.355	0.000
8.2. outdoor play	5	4	3	219.247	0.000
10.1. parent freedom	4	4	4	130.710	0.000
10.2. school freedom	4	4	3	85.256	0.000
10.3. local area freedom	4	4	3	182.881	0.000
12.1. being with friends	5	4	4	51.603	0.000
12.2. sports	4	4	3	56.708	0.000
12.3. social media	3	3	3	73.827	0.000

Note. Indicators with equal central response values are marked in grey
Note 2. The F tests should be used only for descriptive purposes, since the clusters were chosen to maximize the differences among cases in different clusters. The observed significance levels are not corrected for this and thus cannot be interpreted as tests of the hypothesis that the cluster means are equal.

Table 4 shows the CW-SWBS-5 descriptive statistics by cluster and post hoc tests. The CW-SWBS-5 mean for the first cluster (9.420) was 0.7 points higher than for the second cluster (8.753), and 1.2 points higher than for the third (8.215). The CW-SWBS-5 mean for the second cluster (8.753) was 0.5 points higher than for the third cluster (8.215).

Table 4

CW-SWBS-5 descriptive statistics by identified clusters and post hoc tests

Cluster	Mean	Std. Deviation	Std. Error	Cluster	Mean Difference	Std. Error	Sig.
1	9.420	0.7826	0.0177	2	.6666[*]	0.0470	0.000
				3	1.2046[*]	0.0520	0.000
2	8.753	1.4092	0.0419	1	-.6666[*]	0.0470	0.000
				3	.5380[*]	0.0574	0.000
3	8.215	1.8197	0.0630	1	-.5380[*]	0.0574	0.000
				2	-1.2046[*]	0.0520	0.000
Total	8,971	1,3477	0,0215				

Note. *=The mean difference is significant to 0.05.

3.3. Social inequality reflected in children's play environments

Finally, the disaggregated results for the three identified clusters by gender, geographic or cultural origin (by identifying whether children and their parent/s were born in Spain), socioeconomic context (using family affluence and neighborhood income variables), and perceived special needs are shown in Table 5.

The first cluster included a fewer percentage of girls (46.3%) than boys (53.1%) ($\chi^2 = 26.036$; $p < .001$). By geographical and cultural origin, the second cluster included a higher percentage of children who were born abroad or who have parents born abroad (32.6%) than who were born in Spain and have two parents born in Spain (26.8%) ($\chi^2 = 14.079$, $p < .001$). By socioeconomic context, the first cluster included a fewer percentage of children with low family affluence (43.9%) than high family affluence (53.2%). Likewise, the second cluster included a higher percentage of children with low family affluence (33.8%) than with high

family affluence (27.0%) ($\chi^2 = 10.466$, p = .033). Furthermore, the first cluster included a fewer percentage of children who lived in low income neighborhoods (46.7%) than in high income neighborhoods (52.6%). Likewise, the second cluster included a higher percentage of children who lived in low income neighborhoods (30.8%) than in high income neighborhoods (24.6%) ($\chi^2 = 13.471$, p = .009). Finally, by perceived special needs, the first cluster included a fewer percentage of children perceiving personal special needs (45.4%) than those who did not (51.1%) ($\chi^2 = 9.297$, p = .010).

Table 5

Disaggregation of the results for the three identified clusters by gender, geographical or cultural origin, socioeconomic context, and perceived special needs

		1	2	3	Total
Gender	Girls	46.3%	29.3%	24.5%	100.0%
	Boys	53.1%	28.3%	18.5%	100.0%
Born in Spain and parent/s too	No	48.6%	32.6%	18.8%	100.0%
	Yes	51.0%	26.8%	22.3%	100.0%
Family Affluence	Lower	43.9%	33.8%	22.3%	100.0%
	Medium	49.7%	28.6%	21.7%	100.0%
	Higher	53.2%	27.0%	19.8%	100.0%
Neighborhood Income	Lower	46.7%	30.8%	22.5%	100.0%
	Medium	52.2%	27.7%	20.1%	100.0%
	Higher	52.6%	24.6%	22.8%	100.0%
Perceived special needs	No	51.1%	27.9%	21.0%	100.0%
	Yes	45.4%	31.7%	23.0%	100.0%

Note. The percentages commented in the text are marked in grey.

4. Discussion and conclusions

4.1. Children's play environment in relation to their SWB

In terms of the contribution to improving conditions for an optimum play environment in relation to children's SWB, we have observed several factors that apparently negatively affect children's play environments, and could have an effect on sensory and motor development and physical health, emotional and psychological development, development of

sociability and the self (identity), and cognitive development and learning (Van Gils, 2014).

Firstly, regarding the indicator on children getting an appropriate amount of rest for their age

and development (fifth factor), 69% of children in the sample reported insufficient rest. One

solution to this could be to listen more closely to children's needs and provide them with

more opportunities to enjoy time with their families, which is a contributing factor to their

SWB (Corominas, González-Carrasco, & Casas, 2020).

Regarding the indicator on living free from social exclusion, prejudice, or

discrimination (second factor), 46% of children in the sample did not totally agree that other

children would help them if they had a problem at school. Furthermore, children see how they

are treated by their schoolmates as having a strong influence on their SWB at school, and

there may be a correlation between children not perceiving their classmates as supportive and

their perception of not having enough friends to play with (Casas & González-Carrasco, 2017;

Kutsar & Kasearu, 2017).

Thirdly, regarding the indicator on living in an environment sufficiently free from

waste, pollution, traffic, and other physical hazards to allow them to move around freely and

safely within their local neighborhood (fourth factor), 49% did not totally agree with feeling

safe walking around their local area. This inhibitory condition for an optimum children's play

environment directly affects children's SWB, since perceptions of safety in the surrounding

area and satisfaction with safety predict higher levels of satisfaction with life as a whole

(González-Carrasco, Casas, Ben-Arieh, Savahl, & Tiliouine, 2019).

Finally, regarding the indicator on opportunities to invest in their own space and time

to create and transform their world, using their imagination and language (tenth factor): 53%

did not totally agree that their parents gave them enough freedom, 71% did not totally agree

that they had enough choice about what to do at school, and 67% did not totally agree that

they had enough freedom to do what they want in their local area. Therefore, although more

specific data analysis regarding sense of freedom and participation in different contexts in relation to children's SWB could be required, we already know that greater perceived participation in family decisions is related to higher SWB in children (González-Carrasco et al., 2015).

4.2. The three most relevant children's play environments and their SWB

Our results also have identified conditions that promote children's play. Around 50% of the children in the sample (first cluster) displayed low stress and boredom (first factor, regarding freedom from stress), high satisfaction with their free time (sixth factor, regarding availability of leisure time, free from other demands), and usually play or spend time outside five or six days a week (eighth factor, regarding having space and opportunities to play unaccompanied outdoors in a diverse and challenging physical environment). Therefore, this cluster reflects the most common play environment for children, and children belonging to this cluster responded with significantly higher results for the SWB psychometric scale used, CW-SWBS-5: they reported being very satisfied with their own life, and more so than the other children in the sample.

However, 29% of children (second cluster) displayed medium levels of stress and boredom, medium levels of satisfaction with their free time, and play or spend time outside three or four days a week. They reported seeing fights between people in their local area at least once a week, that is, more often than the children in the other clusters. This factor negatively affects children's play environments and is related to the indicator on living in a safe environment free from social harm or violence (third factor). These children displayed moderate results for life satisfaction when using the CW-SWBS-5, which were significantly lower than for children from the first cluster.

Reflecting on another children's play environments, 21% of the children in the third cluster displayed low stress and boredom levels, but also low levels of satisfaction with their

free time, and only play or spend time outside once or twice a week. Furthermore, the

children in this cluster reported playing computer games once or twice a week, that is, less

frequently than the children in the other clusters. This relates to the indicator on accessible

space and time for play, free from adult control and monitoring (seventh factor). Moreover,

these children played sports or did exercise once or twice a week, which was again less

frequently than the children in the other clusters. This relates to the indicator on opportunities

to participate with other children in games, sports, and other recreational activities, and

supported, where necessary, by trained facilitators or coaches (twelfth factor). In relation to

CW-SWBS-5, moderate results were returned on the indicator on life satisfaction, a little

lower than those for children in the second cluster and much lower than those for children in

the first cluster.

The main characteristics of each of these three clusters are in line with prior research

on children's SWB: the way that children spend their leisure time affects their well-being,

intrinsic motivation, satisfaction with leisure activities, with activities related to interpersonal

relationships and the leisure structure that these factors relate to. Free time is considered an

essential aspect of children's psychosocial development, and the activities pursued by

children aged between 8 and 12 may vary across countries, depending in part on whether

these countries have high or low incomes (Adams & Savahl, 2017; Malo et al., 2018; Rees,

2017a, 2018; Sarriera et al., 2014; Savahl et al., 2019). Following on from our results and the

ensuing discussion, the play environment could be considered one of the assets or risk factors

for children's SWB, alongside others that have identified previously, such as housing, safety,

bullying, academic achievement, and social interactions; freedom to choose and self-

perception; and social support, friendliness, and choice about spending time (Bradshaw &

Rees, 2017; Dinisman, Fernandes, & Main, 2015; Lee & Yoo, 2017).

4.3. Social inequality reflected in children's play environments

Considering social inequality by gender, we find that there were a fewer percentage of girls in the first cluster, which represented the most favorable play environment.

By socioeconomic context, the second cluster contained a higher percentage of children with low family affluence than high family affluence, of children living in low income than high income neighborhoods, and also of children born abroad with parents born abroad than children born in Spain with parents born in Spain. This means that children living in poverty or from a foreign geographical or cultural background were more likely to be stressed, bored, and less satisfied with their free time, and less likely to play or spend time outside than the rest of children in the sample. Moreover, the play environments experienced by the children in the second cluster were linked to contexts with higher levels of social harm or violence, as they saw fights between people in their local area more often than the children in other clusters. It is worth noting that we do not assume the groups of children living in poverty and those from a foreign geographical or cultural background to be the same, even if the children from a foreign geographical or cultural background are at higher risk of poverty than local children (Abdul-Rida & Nauck, 2014).

Finally, there were a fewer percentage of children who felt they had personal special needs in the first cluster than in the other clusters. Each of these distinctions and its implications are relevant and require attention in order to fulfil children's right to play (United Nations, 2013).

4.4. Final reflections, limitations, and next steps

In summary, ensuring an optimum play environment for children will guarantee an increase in their SWB. The current study contributes to identifying indicators for an optimum play environment in relation to children's SWB, as well as analyzing the most relevant clusters or groups of children who share similar play environments, centered on social inequality. All of this helps to advance knowledge in psychosocial intervention tackling social

and community issues, and promote social welfare and quality of life (Evans & Horton, 2016;

Hart et al., 1996; Holloway & Valentine, 2000; McKendrick et al., 2018a, 2018b; Woodyer et

al., 2016). As noted by the United Nations (2013), data collection and research on children's

right to play can inform planning processes, and provide a basis for measuring progress in the

implementation of Article 31 regarding children's right to play.

The core research presented here is intended to be applicable in analyzing the

conditions for an optimum play environment for children in Barcelona, in relation to their

SWB. Specifically, it can be applied to identify key indicators for the '2030 Plan for play in

Barcelona public spaces' regarding the conditions for play uses of public space beyond the

play infrastructure (Barcelona City Council, 2019b, 2019c; Cortés & Truñó, 2019).

Furthermore, the core research contributes to research previously carried out in the same local

context by integrating children's SWB in the context of play (Amoly et al., 2015; Dadvand et

al., 2015, 2018, 2017; Guitart Ortiz et al., 2014; Martori et al., 2019; Pérez-Tejera et al., 2018;

Pérez del Pulgar et al., 2020; Pinheiro de Almeida & Gonçalves Siebra, 2015).

This study has some limitations. Firstly, and regarding the conceptualization or

operational definition of play environments, the benchmarks or indicators for any given factor

are never complete because the indicators and factors were developed independently.

However, this exercise is necessary because it helps to identify the indicators for analyzing an

optimum play environment for children in relation to their SWB. Some of these need refining

and others can be incorporated. For instance, the current edition of the Children's Worlds

questionnaire does not provide indicators for the ninth factor (opportunities to experience,

interact with and play in natural environments and the animal world), the eleventh factor

(opportunities to explore and understand the cultural and artistic heritage of their community,

and create, shape, and participate in it), and the thirteenth factor (recognition by parents,

teachers and society as a whole of the value and legitimacy of the rights provided for in article

31). The conceptualization of favorable play environments for children's SWB should be broader than that provided by the General Comment Number 17 of the United Nations, reviewing or thinking about the meaning of current factors, and improving them based on the available evidence. Secondly, as Casas and Frønes (2019) argue, to understand children's well-being we must report the multifaceted perspective of well-being (objective, subjective, developmental and eudemonic well-being) throughout childhood in a longitudinal approach. But this analysis is cross-sectional, based on the SWB of children in Year 5 and 6 (mean age=10.74), and results and conclusions cannot be generalized for children of all ages and all facets of well-being. This also means that future research should focus also on objective indicators. For instance, the children's health status, or the incidence of bullying. Thirdly, it is an initial exploratory approach to investigate what opportunities cluster analysis offers in relation to children's play environments. More research is needed to interpret the impact of the characteristics of children's play environments on their SWB, and more scientific evidence is needed to inform decision-making that reduces social inequality. For instance, by working with samples specifically comprised from more economically impoverished neighborhoods or children with disabilities to discover what they need to improve their opportunities for play.

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