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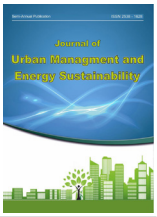

ORIGINAL RESEARCH PAPER

Presenting a Child-Friendly City Logo Design with a Focus on Physical Activity

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ABSTRACT

Child-friendly city is one of the urban planning theories, in line with allocating citizenship rights to children and addressing their demands and needs, with the aim of creating an opportunity for children to shape or change their surrounding environment. The aim of the present study is to present a model for developing child-friendly urban spaces with an emphasis on play and sports. The present study will be a mixed-method study from the perspective of the applied objective, qualitative in terms of the nature of the data, and mixed-method study and exploratory in terms of the implementation method, and will use interviews. The statistical population of the study includes all professors, experts, specialists, and expert professors active in the field of sports management and children's sports specialists, as well as professors in the field of urban planning and development in Iran. In qualitative content analysis, data collection and analysis are consciously carried out simultaneously, and primary data collection is carried out in order to form a continuous data collection process that provides opportunities for the researcher to increase the adequacy of appropriate categories. MAXQDA software version 2020, which was published in 2020, will also be used to conduct the aforementioned analyses. The findings of the study showed that how children participate in sports and physical activities is a complex issue in which many factors are involved.

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INTRODUCTION

Children are a gift from God that should be taken care of as much as possible (Kyei et al., 2021). Children are the hope of every family as the next generation, the hope of the family as the next generation of a nation and civilization (Pazhoothundathil and Bailey, 2021). As the next generation, children must grow and develop optimally in all aspects of their development, both physically and psychologically (Wood et al., 2019). Since children are considered the connecting factor between past and future generations in every society, and considering that they constitute a major part of our society, efforts should be made to create a suitable environment for the child's development and to familiarize them with their needs and innate nature that they need during childhood (Matini et al., 2014). Paying attention to the needs and desires of the age group of children is one of the requirements that international institutions and organizations have emphasized on the one hand, and on the other hand, the country's legal, legislative, and development texts have paid special attention to it. Child-friendly city is one of the key concepts that can be evaluated and analyzed to measure the extent to which children's desires and expectations are met (Abhari et al., 2011). Child-friendly city is one of the urban planning theories in order to allocate citizenship rights to children and address their desires and needs, with the aim of creating an opportunity for children to shape or change their surrounding environment (Taghvaei and Rezaei Adriani, 2011). Therefore, a child-friendly city is a city that has a development system based on children's rights through the integration of government commitments and resources (Ristianti et al., 2000). The process of child-friendly urban design and planning is a new process that was first proposed in 1998 by the Italian Ministry of the Environment in the city of Fano. Also, for the first time in 2007, the "City of Bendigo" in Australia was introduced and recognized by UNICEF as a "Child-Friendly City" and the first city that had all the aspects and characteristics of a child-friendly city from the point of view of UNICEF (Rahimi and Shahrokhian, 2014). In the meantime, urban spaces have a unique role in meeting the social and individual needs of children. Today, due to the increasing development and expansion of small and large cities, children's rights to access urban spaces have become desirable. In a situation where more than half of the world's children live in urban environments and urban spaces occupy a major part of children's daily time and living environment, improving the quality of these spaces in a way that is appropriate for children is effective in health and development of physical strength, strengthening social interactions and group solidarity, and fostering creativity in children, and raising active, demanding citizens, transferring identity and culture to the next generations (Saberi et al., 2017).

In order for cities to become places for children to develop and their needs and rights to be met, their capabilities must be increased and auxiliary tools must be used. This is only possible by creating new places based on cooperation and group interactions at different levels, local areas, and social realms (Karbalai Hosseini Ghiyathvand, 2018). Children create places in their own way and with their imagination. They are always positive and enjoy having fun and playing in the world around them; but what are the real needs of children in urban spaces? The effective presence of children in the city is directly related to the space and urban constructions. A suitable urban space largely provides security and presence for children, while an unsuitable urban space also destroys it and creates the basis for various kinds of harm and social problems. In fact, public spaces such as streets, parks, and playgrounds are considered an arena for children to socialize (Tsou et al., 2005). Preparing urban spaces for children both increases their social responsibilities for urban life and makes them more respectful of the environment and urban spaces in the future and strive to preserve

and maintain them (Gharebigloo, 2012). Just as urban spaces can be places of human virtues with proper planning and design, they can also become defenseless spaces for children through abandonment and improper planning (Eskodal, 2021). Urban spaces play a unique role in meeting the social and individual needs of urban children (Azimi and Farzad, 2010). Children can perform physical activities, interact socially, and connect with nature. However, access to existing playgrounds is still difficult for them in many countries around the world, and the urban environment is not able to accommodate children. Therefore, there must be a process to identify features that will allow playground design to meet children's needs (Ristianti et al., 2020). Play, as the soul of childhood and the distinguishing feature of childhood from adulthood, is the child's communication medium with the world around him. If the most important characteristic of a child is continuous growth, then the importance of play as a means of gaining growth experience will be evident. The conditions in which a child is able to experience searching and finding in the form of children's games and demonstrate diversity, complexity, dynamism, growth and forward movement. Play is a media for a child to learn, express and remember, therefore play is a significant tool for development (Ali and Aliah, 2020). By studying the research conducted on the development of a child-friendly city with an emphasis on play and sports, it was found that no research has been conducted in Iran, or rather, such research was not found, and few recent studies have focused on the subject of the present study abroad. Also, considering the factors underlying the development of a child-friendly city with an emphasis on play and sports, the obstacles ahead, the necessary processes and strategies, and the possible consequences simultaneously can be another type of innovation that is considered in this research. Finally, considering the very high density of the urban population and the lack of attention to open spaces for play and physical activity, and considering the needs of children, a study that can identify the necessary criteria for the development of child-friendly urban spaces with an emphasis on sports seems necessary.

MATERIALS AND METHODS

The growth of urban populations and the increase in migration to cities have led to the uncontrolled development of urban areas, the decline in human well-being, the transition to suburbanization, and the emergence of many problems for various urban managers, especially in developing countries (Badram and Bordbar, 2010). The population of urban children is also increasing rapidly, and there is a growing interest in promoting child-friendly cities and communities. Accordingly, UNICEF has created a framework for building child-friendly cities and communities (Chan, 2021). One of the most important requirements for sustainable urban development is to improve the quality of life of all human groups, and urban planning truly achieves the goals of a desirable city when the desires and needs of all citizens are taken into account according to age requirements. In addition to adults, urban spaces have a young audience who are more at risk from urban spaces than adults due to their specific physical, age, and mental conditions (Wood et al., 2019). Today, many children live in extreme poverty and high-risk neighborhoods, which are among the most vulnerable groups in society. However, they are the link between past and future generations. Accordingly, planning for the sustainability of the neighborhood as the first public place for children's interactive experiences, within the framework of the child-friendly city approach, can provide an opportunity for all children to fulfill their desires (Taefi Nasrabadi et al., 2021). While ensuring a bright future for a society depends on the proper development and upbringing of children, and children are considered the link between past and future generations in every society and are responsible for transmitting traditions, cultures, beliefs in every society. Also,

creating a suitable environment for the development of children can pave the way for ensuring the social health of the next generation. A city that does not pay attention to its children has not paid attention to its past, present, and future generations (Tahmasebzadeh, 2017). So far, in our country, children and adolescents have been ignored in the planning process, despite the concern of designers and planners to improve environmental quality with public participation (and the large share of children and adolescents in the population). This is despite the fact that adolescents are more sensitive, vulnerable, and suffer from deeper psychological stress compared to other groups, and their participation in leisure activities is of great importance (Moyedfar and Safaei, 2019). On the other hand, the problems caused by increasing urbanization and also the transformation of children's activities have caused this segment of society to distance itself from urban play spaces (Chen et al., 2020). Therefore, children, as one of the vulnerable segments of society who are the future builders of tomorrow, should be more involved in urban planning (Badram and Bordbar, 2019).

The disorganization of urban spaces and their lack of adaptation to the needs and desires of children have led to changes in their activity patterns, turning to computer games, lack of acceptance of mobility and transportation, and ultimately the emergence of physical and health complications such as obesity; therefore, organizing and adapting urban spaces according to their needs is actually returning this important group of society to social life and activity again (Garabigloo, 2012). A problem that often occurs in urban areas is the transfer of use of spaces designated for creating parks and play areas for the community, especially children, to building construction (Ali et al., 2020), and given that public spaces in cities are formed based on the principles and criteria of adult use, and most urban spaces are mainly lacking in quality for children to use and far from the characteristics of a child-friendly city (Moedfar and Safaei, 2019). A child-friendly city is an environment in which children can express their desires and influence issues related to themselves (Nan, 2020). The concept of a child-friendly city means how governments manage these cities based on the interests of children (Nam and Nam, 2018) and also refers to cities in which children's basic rights such as health, transportation, protection, education, and culture are respected (Nam et al., 2018). In line with the present research, Abhari et al. (2021) conducted a study entitled Investigating the Status of a Child-Friendly City and Its Relationship with the Quality, Safety, and Security Indicators of the Uses Needed by Children in Jahrom City. The results of the study showed that the lack and weakness of the quantitative and qualitative educational, sports, recreational, health, and security spaces needed by children, as well as the lack of attention to the opinions and desires of children in the design of the various spaces they need, are obstacles to the realization of a child-friendly city in the study area. Abhari et al. (2021) conducted a study titled "Evaluating the Status of Child-Friendly City Indicators and Their Relationship with Children's Access to Essential Utilities" (Case Study: Jahrom City). The results showed that the correlation between child-friendly city and children's access to essential utilities is statistically positive with a value of 0.428. The results of linear regression showed that the independent variable of the study was able to explain 18.3 percent of the variance of child-friendly city. Ziari et al. (1400) conducted a study titled "Explaining the Principles of Child-Friendly City with the Approach of Improving the Urban Environment by Delphi Method and Its Application in District 2 of Tehran." The findings of this study indicated the existence of unfriendly areas in the center and south and in a concentrated state in the north of District 2 of Tehran, which structurally practically cover the main activity cores of the region. Listiasari et al. (2022) conducted a study titled Students' Perception of Child Friendly School Program in Surakarta during the

COVID-19 Pandemic. The results of the study show that students have a positive perception of the existence of child friendly school programs in their schools. Schools usually carry out a certain stage of child friendly school development in order to meet various prerequisite indicators, especially those related to addressing violence in schools. In addition, in terms of participation, using the program enables students to have the courage to report violence that occurs in their schools. Kumar and Arsha (2022) conducted a study in which they conducted a primary study to clarify the principles of child friendly city with an urban environment improvement approach using the Delphi method. The results showed that the scores given to the factors by experts and elites indicate that the criteria of activity and use, quality of recreational and leisure environments, access to nature and green spaces have the highest scores and, as a result, have the greatest impact on achieving improvement in the urban environment in their framework process. Child-friendly cities, according to Brown et al. (2019) and Carroll et al. (2015), the main criterion for developing a child-friendly city with a focus on children's health and sports participation is an attractive environment and space, and Perihantini and Kurniavati (2019) have also considered the availability of facilities, spatial standards, and playgrounds for the development of a child-friendly city. In addition, studies have shown that physical activity and sports have decreased during adolescence (Nam and Nam, 2018). In general, although children desperately need a space for play, learning, exercise, and leisure, which is very important for the development and training of cognitive, emotional, and psychomotor skills, and in addition, the spaces available for children's play are considered a lifeline not only for city residents but also for the physical and mental development of children, in our country, parks, playgrounds, and other public spaces are being destroyed in a worrying way for various reasons, including political and economic power, or simply due to the incompetence and corruption of city officials (Azimi et al., 2017). One way to increase social capital in cities is to strengthen public and civic spaces in cities with regard to the fundamental needs of children (Adams et al., 2019).

But what we are currently facing is an increase in population and, as a result, an increase in the density of existing buildings in the city, which results in a decrease in open spaces that can be used by children. Most residential areas, especially apartments in large complexes today, lack children's play spaces and, at the same time, are far from the exciting nature that is desirable for children and necessary for their growth and health. Now, if these general deficiencies in relation to children's needs are not addressed in the design of houses, at least more attention should be paid to children's play and recreation spaces in the design of urban public spaces and landscaping (Moyedfar and Safaei, 2019). One way to deal with the bottlenecks of children's modern lives is to revive neighborhood values and concepts by raising awareness of the importance of play spaces and creating multipurpose recreational spaces. Therefore, planning a park and children's play area near the residence, with optimal use of natural elements and road safety, is an important step in creating a healthy neighborhood. Urban spaces are organized in such a way that children's needs are often ignored, and although paying attention to children and their needs in the urban environment, including education, upbringing, growth, recreation and entertainment, can play a significant role in their future lives. Urban spaces and furniture designed appropriately for the child's existential dimensions can play the role of the best teacher for experiencing and learning the great lessons of life with other attractions, and creating a child-friendly city is mainly about creating equal opportunities for children in order to shape or change their surrounding environment. Therefore, this research seeks to answer the question of what is the model for developing child-friendly urban spaces based on play and

sports? And what infrastructure is needed for the development of child-friendly urban spaces based on play and sports, or what contexts and platforms can facilitate the development of child-friendly urban spaces based on play and sports? Also, what strategies can ensure the sustainable development of child-friendly urban spaces based on play and sports?

Methodology

This research will be applied from the perspective of the objective, mixed in terms of method (qualitative and quantitative), qualitative in terms of the nature of the data, and exploratory in terms of implementation, and the interview tool will be used. Finally, this research was cross-sectional in terms of time. In fact, in this plan, first, based on qualitative studies of the grounded theory method of Strauss and Corbin, the structures or components in question were described and analyzed. In this way, the framework and factors of those structures and components are extracted and indicators are developed for them. The grounded theory strategy is used to carry out the research. In grounded theory, the purposive sampling method is used, which is also referred to as theoretical sampling. In this method, samples are selected according to specific criteria and initial findings by the researcher. Initial data analyses identify topics that require further explanation; hence, the sampling process proceeds according to the model (theory) development procedure. The statistical population of the research includes all professors, experts, specialists, and expert professors active in the field of sports management and children's sports specialists, as well as professors in the field of urban planning and development in Iran. In other words, in the present study, academic and organizational experts will be selected as the statistical population based on defined indicators and a survey will be conducted on them using the semi-structured interview method along with an open questionnaire. The criteria or index for the inclusion of individuals for interviews are executive work experience or having a master's degree in sports management and at least executive work experience in sports clubs and organizations, having a book, article, or idea and being an expert in the field of the research topic, having a doctorate in sports management, and declaring readiness and informed consent to participate in the survey and semi-structured interviews. In selecting samples for interviews, attention should be paid to the issue of reaching key and important people in the form of theoretical logic. Therefore, the sampling method is also purposeful (judgmental). Purposive sampling is a type of sampling acceptable for specific situations. Data were collected through semi-structured interviews with experts. After the interviews were conducted, conceptual codes were identified from the interview texts, and the interview texts were analyzed. Data analysis was performed simultaneously and continuously with information collection. For data analysis, the grounded theory method of Strauss and Corbin's (1997) approach was used to extract concepts. Using this method, explicit and implicit concepts were identified. In this study, three coding stages were implemented: open coding, axial coding, and selective coding. During the three coding stages, open coding was performed first, followed by axial coding, and finally selective coding. In order to achieve the desired integrity at this stage, it is necessary for the researcher to regulate the main phenomenon and commit himself to it); In qualitative content analysis, data collection and analysis are consciously carried out simultaneously, and primary data collection is carried out in order to form a continuous data collection process that provides opportunities for the researcher to increase the adequacy of appropriate categories. Also, MAXQDA version 2020 software, which was published in 2020, will be used to perform the aforementioned analyses. And SPSS version 25 software is used to describe demographic variables. It should be noted that in this study, all statistical analyses in the quantitative section are interpreted with a 95% confidence interval.

DISCUSSION AND FINDINGS

The purpose of axial coding is to create relationships between the categories generated (in the open coding phase). This is usually done based on a paradigm model and helps the theorist to facilitate the theorizing process. In this phase, the researcher compares the coded data and the concepts extracted in the previous phase and organizes them into clusters and categories that fit together. To this end, the researcher compares each of the first-level codes and concepts to ensure that the categories are distinct from each other. The axial coding is presented below: (Tab. 1)

Table 1: Axial coding of data

Pivotal code	Open source
Economic factors	Inflation
	Lack of financial resources
	High prices for providing sports services
	Unfavorable economic conditions
Social factors	Respect for children's rights
	Increased awareness among parents and community members about children's rights
	Gaining an understanding of societal norms
	Improving the spirit of friendship in children
	Introducing the child to the outside environment
Political and managerial factors	Lack of attention from urban managers and planners to children's needs
	Diversity in decision-making
	Continuous supervision by officials over children's play areas and spaces
	Employing caring and expert managers in the field of children's sports and games
	Planners' thinking and philosophy regarding the child-friendly city
	The level of sports literacy of managers
	Wrong policymaking
	Inadequacy of subordinate institutions
Individual and family factors	Parents' demand for children's rights
	Sports and movement literacy in the family
	Parents' desire for children's well-being
	One-child system
	Parents being busy and not having time for the child
Health-oriented factor	Parents being busy and not having time for the child
	Increasing motor poverty in children
	Increasing the child's physical strength
	Having a suitable physical physique
	Children's lack of physical activity during the coronavirus pandemic
	Children's interest in computer games and inactivity

Pivotal code	Open source
Infrastructure factors	Paying attention to spaces related to children
	Providing the necessary infrastructure for parental supervision in the created spaces
	Changing construction patterns and increasing apartment living
	Deployment of sports and gaming equipment in various urban areas
	Creating green space for children to play
	Terms of existing spaces
	Access to the transportation system
	Creating child-friendly spaces close to residential areas
	Providing creative and stimulating spaces for activity
	Paying attention to the needs of children with disabilities
Supporting factors	Child-Friendly City Branding
	The amount of donations from local donors and supporters to create these spaces
	The extent of cooperation between the Ministry of Education and NGOs and charities in this field
Urban management	Developing new urban maps in line with demographic changes
	Requiring the municipality to consider these spaces
	Taking into account climatic conditions
	Considering the culture of the region
Media activities	Media attention to the issue of child-friendly cities
	Creating programs to motivate children to be active
	Providing examples through the media
Legislation	Reforming laws related to children's rights
	There are no special rules in this regard.
	Drafting an urban development document
	Developing an urban development document appropriate to new urban spaces
	Talk about developing new laws in this regard
	Upstream rulemaking
Physical factors	Creating parks and playgrounds
	Creating a stimulating environment
	Developing play spaces in kindergartens and preschools
	Pedestrian and bicycle access
	Development of a park to promote motor literacy
	Creating creative and adventurous playgrounds
	Creating playhouses
	Creating children's clubs
Security factors	Addressing the safety and security of these spaces
	Creating a safe and healthy environment for play
	Securing child-friendly spaces
	Establishing health stations
	Developing safe and healthy playgrounds

Pivotal code	Open source
Human resources	Employing quality and expert trainers
	Hiring skilled trainers and teachers
	Lack of expert trainers
	Using physical education graduates and well-known individuals in this field
	Increasing the number of skilled trainers in urban development
Culture building	Child participation in decision-making related to child-friendly spaces
	Building a culture of children's play
	Promoting the culture of the impact of play on children
	Encouraging children to be active in schools
Awareness raising	Raising awareness among families
	Holding conferences and training sessions
	Holding pathology courses in this field
	Lack of media advertising to promote a child-friendly city culture
	Raising awareness among the community
	Holding awareness courses in this field
Finance and welfare	Access to welfare services
	Equipment
	Providing health, welfare, and treatment facilities and medical emergencies
	Financing related urban projects
	Easy access to facilities and services
	Investing and allocating sufficient financial resources
Organizational	Reconsidering government policies and education
	Lack of cooperation between implementing agencies to expand these spaces
	Practical and executive annex dedicated to child-friendly urban space
Physical and mental	Creating spiritual vitality in the family
	Energy depletion in children
	Increasing the child's motor literacy
	Discovering children's sporting talents
	Keeping children away from depression
	Providing appropriate spaces for the development of the child's cognitive and motor skills
Educational	Improving the quality of parenting
	Desire to raise children
	Children being confined to the house
	Mistreatment of children in the family
	Improving the quality of parenting
Developing interactions and skills	Creating interactive spaces to meet children's social needs
	Providing appropriate spaces for the development of the child's cognitive and motor skills
Environmental	Beautifying the environment such as sidewalks, etc.
	Securing child-friendly spaces
	Creating creative and adventurous playgrounds
	Lack of city development in terms of creating child-friendly spaces
	Environmental attractiveness and color scheme of child-friendly spaces

In the above table, axial coding was performed from the initial code categories, and thus, the axial codes of social, economic, individual and family factors, political and managerial factors, health-oriented factors, infrastructure, support, urban management, media activities, legislation, places and equipment, security, human resources, culture, financial and welfare, organizational, physical and mental, educational, social and environmental factors were extracted. The selected codes are extracted below.

Selective coding

After finding the commonalities between these subcategories, we arrive at 5 main categories, which are the main components of the present research model. By establishing a connection and semantic proximity between the axial codes listed in Table 2 and their overlap, the researcher arrived at the central categories of the research, which are the selected codes. (Tab. 2)

Confirmatory factor analysis

The external model is equivalent to confirmatory factor analysis. That is, to examine the model, the external model is first used to measure the relationships of latent variables with their measurement items. The external model examines the relationship of the items, or questionnaire questions, with the constructs. In fact, until it is proven that the questionnaire questions have measured the latent variables well, the relationships cannot be tested. The external model was used to show that the latent variables were measured correctly. The results of the measurement model are presented in Table 3. The results of the factor analysis of the research variable measurement scale are presented in the figures. The factor loading of the observable variable in all cases has a value greater than 0.3, which indicates that the correlation between the latent variables and the observable variables is acceptable. The t-value statistic is greater than 1.96, which indicates that the observed correlations are significant. (Tab. 3)

Table 2: Selective coding of concepts

Selected code	Pivotal code	Open source
Causal factors	Economic factors	Inflation
		Lack of financial resources
		High prices for providing sports services
		Unfavorable economic conditions
	Social factors	Respect for children's rights
		Increased awareness among parents and community members about children's rights
		Gaining an understanding of societal norms
		Improving the spirit of friendship in children
		Introducing the child to the outside environment
	Political and managerial factors	Lack of attention from urban managers and planners to children's needs
		Diversity in decision-making
		Continuous supervision by officials over children's play areas and spaces
		Employing caring and expert managers in the field of children's sports and games
		Planners' thinking and philosophy regarding the child-friendly city
		The level of sports literacy of managers
		Wrong policymaking
		Inadequacy of subordinate institutions

Selected code	Pivotal code	Open source
Causal factors	Individual and family factors	Parents' demand for children's rights
		Sports and movement literacy in the family
		Parents' desire for children's well-being
		One-child system
		Parents being busy and not having time for the child
	Health-oriented factor	Parents being busy and not having time for the child
		Increasing motor poverty in children
		Increasing the child's physical strength
		Having a suitable physical physique
		Children's lack of physical activity during the coronavirus pandemic
		Children's interest in computer games and inactivity
Background conditions	Infrastructure factors	Paying attention to spaces related to children
		Providing the necessary infrastructure for parental supervision in the created spaces
		Changing construction patterns and increasing apartment living
		Deployment of sports and gaming equipment in various urban areas
		Creating green space for children to play
		Terms of existing spaces
		Access to the transportation system
		Creating child-friendly spaces close to residential areas
		Providing creative and stimulating spaces for activity
		Paying attention to the needs of children with disabilities
	Supporting factors	Child-Friendly City Branding
		The amount of donations from local donors and supporters to create these spaces
		The extent of cooperation between the Ministry of Education and NGOs and charities in this field
Intervening factors	Urban management	Developing new urban maps in line with demographic changes
		Requiring the municipality to consider these spaces
		Taking into account climatic conditions
		Considering the culture of the region
	Media activities	Media attention to the issue of child-friendly cities
		Creating programs to motivate children to be active
		Providing examples through the media
	Legislation	Reforming laws related to children's rights
		There are no special rules in this regard.
		Drafting an urban development document
		Developing an urban development document appropriate to new urban spaces
		Talk about developing new laws in this regard
		Upstream rulemaking

Selected code	Pivotal code	Open source
Strategies	Physical factors	Creating parks and playgrounds
		Creating a stimulating environment
		Developing play spaces in kindergartens and preschools
		Pedestrian and bicycle access
		Development of a park to promote motor literacy
		Creating creative and adventurous playgrounds
		Creating playhouses
		Creating children's clubs
	Security factors	Addressing the safety and security of these spaces
		Creating a safe and healthy environment for play
		Securing child-friendly spaces
		Establishing health stations
		Developing safe and healthy playgrounds
	Human resources	Employing quality and expert trainers
		Hiring skilled trainers and teachers
		Lack of expert trainers
		Using physical education graduates and well-known individuals in this field
		Increasing the number of skilled trainers in urban development
	Culture building	Child participation in decision-making related to child-friendly spaces
		Building a culture of children's play
		Promoting the culture of the impact of play on children
		Encouraging children to be active in schools
	Awareness raising	Raising awareness among families
		Holding conferences and training sessions
		Holding pathology courses in this field
		Lack of media advertising to promote a child-friendly city culture
		Raising awareness among the community
		Holding awareness courses in this field
	Finance and welfare	Access to welfare services
		Equipment
		Providing health, welfare, and treatment facilities and medical emergencies
		Financing related urban projects
		Easy access to facilities and services
		Investing and allocating sufficient financial resources
	Organizational	Reconsidering government policies and education
		Lack of cooperation between implementing agencies to expand these spaces
		Practical and executive annex dedicated to child-friendly urban space

Selected code	Pivotal code	Open source
Consequences	Physical and mental	Creating spiritual vitality in the family
		Energy depletion in children
		Increasing the child's motor literacy
		Discovering children's sporting talents
		Keeping children away from depression
		Providing appropriate spaces for the development of the child's cognitive and motor skills
	Educational	Improving the quality of parenting
		Desire to raise children
		Children being confined to the house
		Mistreatment of children in the family
		Improving the quality of parenting
	Developing interactions and skills	Creating interactive spaces to meet children's social needs
		Providing appropriate spaces for the development of the child's cognitive and motor skills
	Environmental	Beautifying the environment such as sidewalks, etc.
		Securing child-friendly spaces
		Creating creative and adventurous playgrounds
		Lack of city development in terms of creating child-friendly spaces
		Environmental attractiveness and color scheme of child-friendly spaces

Table 3: Outer least/partial squares model for research variables

Research variables	Items	Standard factor load	t-statistic
Economic factors	Q1	0.739	11.19
	Q2	0.826	22.59
	Q3	0.847	19.44
Social factors	Q4	0.794	16.61
	Q5	0.808	23.01
	Q6	0.842	27.69
Political and managerial factors	Q7	0.691	8.57
	Q8	0.812	26.05
	Q9	0.805	24.54
	Q10	0.616	8.22
Individual and family factors	Q11	0.785	18.06
	Q12	0.705	9.21
	Q13	0.619	5.25
Health-oriented factors	Q14	0.576	5.31
	Q15	0.814	20.55
	Q16	0.795	13.30

Research variables	Items	Standard factor load	t-statistic
Infrastructure factors	Q18	0.741	16.95
	Q20	0.803	19.48
	Q21	0.619	9.59
	Q22	0.782	21.92
	Q23	0.822	31.49
Supporting factors	Q24	0.808	21.24
	Q25	0.837	29.85
Child-friendly city	Q26	0.774	18.85
Urban management	Q27	0.794	24.81
	Q28	0.634	7.37
	Q29	0.858	28.21
	Q30	0.797	25.18
Media activities	Q31	0.871	39.26
	Q32	0.821	25.43
	Q33	0.835	29.86
Legislation	Q34	0.746	15.13
	Q35	0.716	15.65
	Q36	0.798	24.50
	Q37	0.817	29.80
Physical factors	Q38	0.751	17.90
	Q39	0.690	12.55
	Q40	0.857	40.37
	Q41	0.663	11.65
	Q42	0.814	27.47
Security factors	Q43	0.866	37.89
	Q44	0.736	17.10
	Q45	0.798	19.48
Human resources	Q46	0.897	48.93
	Q47	0.810	23.10
	Q48	0.867	40.12
Culture building	Q49	0.817	27.82
	Q50	0.830	29.94
	Q51	0.753	15.43
Awareness raising	Q52	0.773	17.92
	Q53	0685	8.70
	Q54	0.791	23.88
Finance and welfare	Q55	0.548	5.66
	Q56	0.793	19.69
	Q57	0.774	19.52
	Q58	0.834	29.81

Research variables	Items	Standard factor load	t-statistic
Organizational	Q59	0.887	50.31
	Q60	0.707	8.36
	Q61	0.789	16.50
Physical and mental	Q62	0.833	24.53
	Q63	0.790	17.90
	Q64	0.833	31.7
	Q65	0.848	30.84
Educational	Q66	0881	19.40
	Q67	0.631	5.11
	Q68	0.533	3.49
Developing interactions	Q69	0.841	23.68
	Q70	0.882	57.90
Environmental	Q71	0.807	17.59
	Q72	0.826	29.21
	Q73	0.832	26.11

Based on the results of the measurement model in Table 3, the observed factor loading in all cases (questions with factor loadings less than 0.3 were eliminated); has a value greater than 0.3, which indicates that there is a good correlation between the observable variables and their related latent variables. Also, based on the bootstrapping value (t-statistic), in all cases it is greater than the critical value of 1.96, which indicates that the correlation between the observable variables and their related latent variables is significant. Therefore, it can be concluded that each main variable has been measured correctly and, considering the findings of this scale, the research hypotheses can be tested. (Tab. 4)

Table 4: Obtained goodness of fit indices

Dimensions	R2 index	Q2 Index	GOF
Strategies	0.431	0.37	501/0
Background conditions	---	0.31	
The central factor of a child-friendly city	0.535	1.000	
Infrastructure factors	----	0.36	
Causal factors	----	0.23	
Consequences	0.754	0.37	

The coefficient of determination indicates the effect of the exogenous variable on the endogenous variable. This criterion has the ability to reduce errors in the measurement model and increase the variance between the structure and indicators and is controlled only in PLS. Three values of 0.10, 0.23 and 0.57 are considered as weak, medium and strong values for the intensity of the relationship, which, according to the value of the coefficient of determination obtained from Table 4, the value of the coefficient of determination of the endogenous variables is acceptable. The quality of the structural model is calculated by the predictive power index (Q2). The purpose of this index is to examine the ability of the structural model to predict by the neglect method, based on which the model should predict the indicators of the latent endogenous reflective variables. Regarding the intensity of the predictive power of the model, three values of 0.02, 0.15 and 0.35 have been determined as weak, medium and strong values, which is acceptable considering the values obtained for all the variables in the table above. The goodness of fit (GOF) criterion is related to the general part of structural equation models, which, after exam-

ining the measurement part and the structural part of the general research model, also controls the overall fit, which was invented by Tenenhaus et al. (2004) and is calculated according to the following formula. Three values of 0.01, 0.25 and 0.36 have been introduced as weak, medium and strong values; which were fitted by calculating the model with a strong value.

Path analysis model for main hypotheses

This section examines the coefficients between the research variables, which are referred to as regression effect coefficients in the relationships between variables. In these coefficients, the effect of the independent variables on the dependent variable, or in other words, their effect on the dependent variables, is determined. (Fig. 1)

As can be seen, in all cases the factor loadings have values higher than 0.3. Therefore, the factor analysis is confirmed.

Measuring the structural model of meaningful numbers

The main criterion for measuring the relationship between the constructs in the model is the t-significance numbers. If the value of these numbers exceeds 1.96, it indicates the accuracy of the relationship between the constructs and, as a result, the confirmation of the research hypotheses at the 95% confidence level. (Fig. 2)

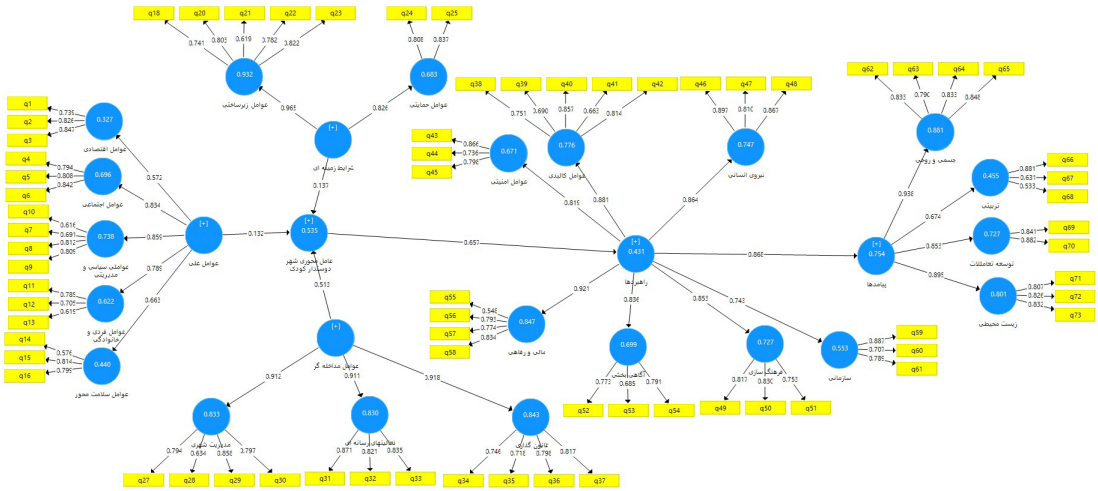

Figure 1: Partial least squares confirmatory factor analysis

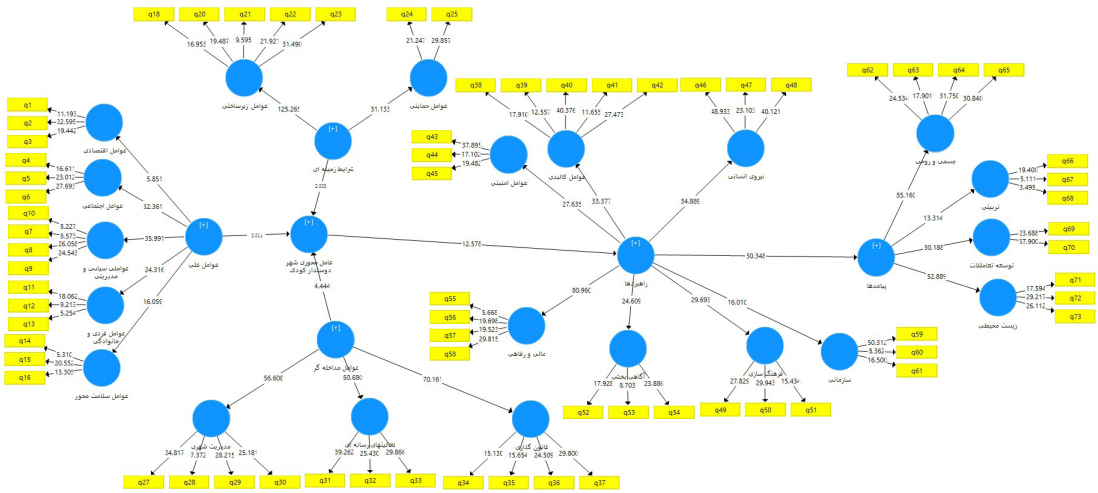

Figure 2: Confirmatory factor analysis (t-value statistic)

Table 5: Results of testing research hypotheses

Row	Hypothesis	Beta co-efficient	Amare T	Signifi-cance level	Results obtained
1	Causal factor-- > Pivotal factor	132/0	011/2	029/0	Rejecting the null hypothesis at the 95% confidence level
2	Contextual factor-- > Pivotal factor	137/0	088/2	027/0	Rejecting the null hypothesis at the 95% confidence level
3	Intervening factor -- > Pivotal factor	513/0	444/4	000/0	Rejecting the null hypothesis at the 95% confidence level
4	Pivotal factor-- > Strategies	657/0	578/12	000/0	Rejecting the null hypothesis at the 95% confidence level
5	Strategies-- > Consequences	868/0	348/30	000/0	Rejecting the null hypothesis at the 95% confidence level

Accordingly, based on the results obtained from structural equation modeling, the hypotheses of the present study can be confirmed or rejected as follows. (Tab. 5)

According to the results obtained from fitting the research model, it can be seen that all the drawn paths are meaningful. Thus, it can be said that causal, contextual, and intervening factors, by influencing the central factor, strengthen the effect of this factor on child-friendly city strategies and ultimately cause the strategies to influence the resulting factors.

CONCLUSION AND RESULT

How children participate in sports and physical activities is a complex issue that involves many factors. What space and facilities children use for sports and physical activities and how they carry them out requires examining all factors that are manifested in the form of causal factors, background and enabling factors, intervention factors, management strategies, and consequences of developing child-friendly urban spaces. Given that children are the future builders of society, their physical and mental health is of great importance. In the present study, 21 pivotal codes were obtained from the analysis of qualitative data. These pivotal codes were categorized into 5 categories of selected causal codes: causal, background, intervention, strategies, and consequences. “Causal categories” cause the creation and development of the pivotal phenomenon. Based on the findings from the interviews conducted with the participants, five categories of economic, social, political and managerial, health, and individual and family were identified as causal categories. Regarding causal factors, the interviewees believe that inflation, lack of income, difficult economic situation in the household, and parents’ involvement in work affairs will not allow enough time and source of income for parents and children to attend playgrounds, which has led to the decrease in the presence of children in the community and playgrounds, and the authorities do not pay enough attention to this issue. This can lead to insufficient supervision by the authorities and inattention to issues related to children. In the research, the research samples included reasons such as the high dependence of children on the family, parents’ employment, parents’ lack of time for children’s physical activity, the one-child system, and the child’s parents’ inactivity, among the factors affecting the development of a child-friendly urban space, which was in line with the research of Babaei Zarch and Salehi (2020). These researchers also listed factors such as lack of access to sports

facilities in the area, problems with commuting to the playground, the high cost of using sports facilities, the unsafe environment outside the home, and lack of time as obstacles to their children's participation in sports programs. The indirect effects of each variable are equal to the product of the individual paths of that variable. For example, the indirect effect of sports activities is equal to the product of the coefficients of the path of sports activities on child-centered spaces and child-centered spaces on the degree of child-centered city, and the indirect effect of participation is equal to the product of the path of participation on sports activities and the path of sports activities on child-centered spaces. The total effect of each variable is also equal to the sum of the direct and indirect effects of that variable. Political and managerial factors such as managers' lack of attention to children's needs for physical activity, lack of continuous supervision by officials over children's play spaces, and low sports literacy of managers have led to the development of these places not being given optimal attention, and wrong policies have also been effective in reducing children's play spaces in the city. Arlinkasari et al. (2020) stated that children's experiences develop in public spaces, therefore, urban design methods that promote the psychosocial development of children from low-income families should be developed.

Another factor that the research samples pointed out was the per capita physical activity and sports of children aged 3 to 7 years, pricing of sports services based on perceived value, alignment of services with the current inflation rate in the country, the level of attention families pay to costs and investments to guide their children towards sports and physical activity, the cost of sports equipment and supplies, and the views of ministry managers and school principals towards children's sports and physical activity, the level of sports literacy of preschool and kindergarten teachers, and the thinking and philosophy of children's sports planners are important causal factors in the development of children's sports and physical activity (Ershad et al., 2018). In the last stage of the results obtained in the concept of "effective consequences on the development of a child-friendly urban space", based on the analyses and results of the interviews, physical and psychological, educational, social and environmental consequences were extracted, which shows that paying attention to spaces dedicated to play and creating movement in children can, in addition to creating spiritual vitality in them, increase physical movement and reduce disorders such as obesity and skeletal deformity. The validity and reliability examination of the research variables shows that the validity and reliability of the research variables are confirmed. Also, the confirmatory factor analysis conducted for the research items showed that the factor loading of all items was more than 0.3, and the t-statistic for all items was more than 1.96, and thus it can be said that the confirmatory factor analysis in the present study has been confirmed. In the continuation of the study, the goodness of fit and model quality indices were examined, and all indices showed that the goodness of fit of the fitted model was confirmed. Finally, after drawing the structural equation model, the relationships between the variables were measured. The results of the study showed that causal factors have a significant effect on the central factor, which is the development of a child-friendly city. Also, background factors and intervening factors have a positive and significant effect on the central factor, and in fact, strengthening causal, background and intervening factors can have a positive and significant effect on the development of a child-friendly city. The results further showed that the central factor can strengthen strategies in strengthening a child-friendly city. Also, strategies are effective on the outcomes of developing a child-friendly city. Factors such as not being obese or overweight, having a suitable physique, increasing motor development, increasing quality of life and mental health were obtained, which were in line with the research

of Moeini et al. (2010). Factors such as increasing motor literacy in children, increasing physical literacy in children, increasing nutritional literacy, increasing health knowledge in children are in line with the World Health Organization's 2010 theory of eliminating inactivity and low physical activity. Also, according to the research of Dernovatz et al. (2014), in many industrialized countries, including Germany, in the last few decades, overweight and obesity have become very prevalent in children and adults, and this has led to the spread of metabolic and cardiovascular diseases that were previously only common in adults. The following suggestions are presented in line with the findings.

- Authorities should pay sufficient attention to the creation of green space as one of the main factors of the spatial dimensions and form of the city; green spaces are one of the appropriate platforms in which the level of interaction and participation of children in relation to environmental decisions can be increased. Therefore, on the one hand, the issue of green space as one of the spaces of interest to children can increase their motivation to participate in design, and on the other hand, the existence of green spaces in cities leads to the creation of participatory platforms between children and other age groups in society.
- Providing children with independent access to a diverse range of services and social activities suitable for children of all ages, abilities and cultural backgrounds.
- Building the capacity of children to be healthy and acquire skills through active participation in the local community environment.
- Authorities should pay special attention to physical environments that respond to the specific needs and concerns of children, such as safe crossing areas on the way to school, safe play areas and child-friendly health units. In fact, all aspects of parks, hospitals, schools, transport systems, traffic management, public spaces, water supply, waste collection, etc. that make cities more child-friendly.

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