Role of Buildings' Architecture in Post-Corona Quarantine Crisis

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Abstract

During history, whenever a virus or a disease taken over a society epidemically, people rarely appeared in public spaces and spend most of their time in home isolation. In this regard and these hard days of disease and quarantine, architectures are also addressed their architectural design's role in preventing the destructive consequences of these hard days, so that, in such conditions, people do not face the mental problems due to their staying at home. In this crisis, by providing appropriate space, buildings' architecture can encourage people to stay at home in order to prevent the outbreak and spread of disease. In this research, the necessity of space and its architecture during quarantine and environmental psychology's role in relation to the sense of place in this period have been studied. First, a review on concepts and definitions of related theories is performed then the indices forming a sense of place are investigated by explaining different factors. Besides, how life-giving spatial criteria affecting space to create comfort with perception and interaction approach is investigated; which analysis the environment-person dynamic relation based on three perception levels including practical, inferential, and responsive which meets human psychological needs. Perception of the environment determines the person's reaction and results in preferring the environment by the person. The methodology used in this research is of analytical descriptive type. On this basis, a questionnaire was designed to answer four-point Likert-type scale questions in which five items include physical, perceptual, functional and vitality. Degree of correlation within the items and Cronbach's alpha coefficient have been evaluated. With the use of one-sample t-test, the extent of effectiveness of factors identified during the quarantine period is investigated. The results show that there is a meaningful difference between the questionnaire's questions in terms of importance and ranking; this significant difference of chi-square value has been determined using the Friedman test. Therefore, in this research, it is tried to create an appropriate space in terms of architectural design so that it can be useful for providing a suitable foundation to employ more people in this space during quarantine by creating more comfort and relax conditions.

Keywords: environmental psychology, sense of place, space, perceptions, quarantine period, architecture.

1. Introduction

During its life, human facing with so many ups and downs, which sometimes see itself the cause and usually are out of its free will. In such a definition, this question may be raised that what happened if one day human unwillingly stopped his/her daily works? Clearly, if today he/she cannot do the works he/she did the day before, and be imposed on he/she to stay, or simply imprisonment, in a place for a known/unknown period, how she/he will act? Sometimes, humans are able to adapt themselves to such situations, while most humans are developed in diseases and/or depression which can be very dangerous for the rest of him/her life. Now imagine that one person is in such condition, and fully perceives the situation we call quarantine.The activities and devices such as watching films, mobiles, internet, etc. can keep

the peoples busy for a short period, and after a while, people inevitably put them aside. However, in this period which house is like solitary confinement, which can help people to reduce his/her depression.

In a book entitled "Voyage Around My Room", the writer said that a small apartment has been intolerable only after two days and I felt suffocated; I noticed that by a designer can think about these days by very ordinary design (DE Maistre, 1877). If architecture considered as the mother of all arts, mother predicted all possible scenarios for her child and tried to find a solution for it.

By some limitations in design, an architecture can reflect the art light in soulless houses. However, it requires that he/she think about all house dimensions and imagine himself/herself in that house for some periods, then find a design so that energy and sense of belonging of a person stayed at that house for a period should not be degraded. Now, the designer imagines himself/herself in a modern house. A family must stay at home due to the virus outbreak and quarantine themselves. The condition of this house exactly is the same as the current days in which the architecture condition is not well all around the world; add poor economic situation to such stresses. In such a condition, the architecture should imagine himself/herself instead of that person and think whether he/she can stay at that house for a period? Houses wherein there are a small window with a short roof and dull and repetitive colors and even spaces which quickly become repetitive; houses which are limited to a hall, a kitchen and a room, that are poor in terms of interior architecture; houses which are not suitable for even a small family in terms of dimension; inappropriate positioning of a window that there is a cement wall in front of it with a short distance. But the only thing that all media are talking about is "stay at home"; stay in a house which is like solitary confinement and has no attraction that makes the person happy, so that does not suffer the depression. Actually, people can not stay in such an environment even by pressure from governments. Therefore, it is concluded that he/she will inevitably break the home siege and will raise some issues for himself/herself and society; as a result, he/she will transmit the disease and will break the resist chain.

It is precisely the time that a basic idea should be made and be aware that the shortages of modern houses such that do not encourage people to come out of their homes; definitely, it can be claimed that if a basic idea is not made, after a while, people will suffer from depression and unconsciously, think of leaving their homes and will break the siege. But who can take participate in encouraging people to stay at home in the quarantine period? Maybe government by its financial and banking incentives and physicians by warning them to spread the disease if they come out of their houses. But which groups have the most share for serving the people? Also, it can say that art and architecture can play their roles in such a critical period to help people.

2. Literature review

Quarantine is a French word which means establishing a healthcare monitoring system in a region a disease appeared and restricted all possible ways for entering the diseases into the region. In most countries, the word "quarantine" is known in the same way, which means establishing a 21-day period to prevent spread and transmitting communicable diseases. Quarantine has been used in old and ancient civilizations, and since the ancients believed that disease had been created due to the influence of jinn and demons on the individual; so, the jinn and demons must be expelled from the patient's body to keep the individual safe. As a result, the patient was kept in a room separate from healthy ones, and they tried to expel the jinn and demons from the patient's body using witchcraft and extraordinary deeds (Iran Veterinary Organization, 2009).

Marco Polo, famous Italian explorer, in his itinerary explained that as he arrived at Tabriz city, the plague has spread throughout the city, and since the city gates were closed because of disease, he inevitably stayed 40-day in this city. In the 14th century, to prevent the spread of contagious human diseases such as plague from one area to another, the ships that had come from diseased-infected areas and/or during the travel a disease was observed in ships' crews, they were forced to be isolated with their whole commercial cargo, passengers and crews for 40-

day far enough away from the city, so that the disease had disappeared. The quarantine actions in the 14th century to some extent, were successful in inhibiting disease. So, as fast as possible, the same actions were taken in other countries, so that the laws required heavy penalties; besides, particular people were assigned in order to implement the rules mentioned above.

There are fundamental questions that architecture is facing within the fields, including representation and organization of activity and power, cultural and social systems, interaction and separation, identity and memory. All experiences imply the actions include thinking, recalling, and comparing. Visualized memory plays an essential role in reminding every space or place. The cities and suburbs we visited and the places we remembered all are transferred into our visualized memory. Our habitat is unified with our identity and has become a part of our body and life.

In 1954, Search Results Frank Lloyd Wright, when he was 85-year-old, defined the mental duty of architecture as follows: in modern architecture, the most important thing is quality of an important factor which is most needed in life; and this is nothing but the integrity like that lies in human nature. Hence, integrity is the deepest quality exists in a building (Yuhani Plasma, 2014).

If we succeed to establish the integrity, we deliver excellent service to spiritual-psychological nature of our democratic society. Embedding the integrity in the building; you want integration. The mutual connection is inevitable not only in the life of those which construct the building but also in terms of social. However, some people may conclude that is it possible a person establishes a quarantine or locked himself/herself intentionally? Also, they may believe that this will not happen to us and we do not need quarantine; with a short look at history, the answer can be easily found (Bakhsh Abadi et al., 2015).

Theoretical foundations

1. Place

From Scholtz view, the place is a space that is felt, percept and then stored in memory (Pourmand et al., 2010). The place is a concept which today has gained a special place in architecture and urbanism study. The most acceptable theories concerning the place concept have been proposed by David Canter. He considers place is composed of spatial features' dimensions of activity and imaginations (Canter, 1977). Generally, the place is a space which makes sense during individual and group cultural process. In fact, it is based on their experiences, social communications, feelings, and thoughts that peoples give meaning to place in the physical bed of space (Stedman, 2003[2]). However, the formation of the place is the social outcome and is retrieved from social communications and activities within it. Since the semantics, components and activities are embodied in a physical place and created by human cognition, and it is crucial to know how to create such meanings are individuals (Relph, 1976).

Edvard Relph believes that a place goes beyond a space when it has three properties of a physical range of activity and meaning. Among these three properties, he believes that meaning is the central part of this group (Relph, 1976). Also, by presenting the "facets of place" theory, Canter has categorized the four parts related to a place include performance difference, space targets, interaction scale, and design parts; in which the performance difference refers to place activities, place targets refer to concepts and meaning of place, and scale and environmental size and design parts refer to physical elements of a place (Canter, 1977). From the standpoint of environmental psychologies, the main topic concerning the place is that human embedding their activities in a specific place.

Behavior in a place is a relative matter corresponding to human feeling; a specific behavior can be appropriate in one place while is inappropriate in another place. Canter believes that place can be separate and independent of a person (Cassidy, 19997). He considers place as a part of natural space which has a specific range conceptually or materially; this is the result of a relationship between three factors include human activities, concepts and physical properties.

1.2 Sense of place

The general sense which a human achieves after perception and judgment about a unique environment is called a sense of place. This concept will lead to coordination of human with the environment, its better utilization, users' satisfaction, and eventually a sense of belonging to that place and continuing to attend in that place (Relph, 1976).

1.3 Sense of place's theories

Tuan has used the term sense of place instead of "place loving"[3], and believes that it is a loving and influential bridge between people and places which can create emotional aesthetics (Tutan, 1980). Also, Relph refers to the place as a combination of space, events and memories, and considers the sense of place something beyond which integrated with past time (Relph, 1976).

Generally, the sense of place's theories divided into two categories: psychological and phenomenological. Steele believes that sense of place is the same experience of things which are given to a location by humans; he also believes the set of factors create the place's name are divided into two main categories including perceptual-cognitive and physical factors (Steele, 1981). Jorgensen considers the attitude theory for a 3-dimensional place. A person's feelings regarding a place indicate his/her emotional dimension, understanding and beliefs in the physical body of the place, which constituting his/her cognitive dimension and behavioral tendencies in a place, representing the behavioral dimension of place (Jorgensen, 2001). These dimensions correspond to Canter's model of sense of place, such that cognitive, behavioral and emotional dimensions correspond with form, performance and imaginations of person,

respectively (HashemNezhad, 2013). According to Canter's model, the place is a part of the natural or constructed place which has a specific range conceptually or materially; and the results of mutual relations between three human behavior factors with concepts and physical attributes are based on it (Canter, 1997). According to the theories mentioned above, in dividing different dimensions constituting the sense of belonging, different dimensions range from physical environment and architecture of environment to personal, and social psychological factors contribute in the creation of a sense of belonging to a place. Belonging to a place is a bond between a person or a group and place, which varies according to the spatial level of degree of specificity as well as physical and social attributes of place, and reveals by cognition sense and behavioral psychological processes (Scannel&Gifford, 2010)

1.4 Sense of belonging to place

Sense of belonging to a place has been defined as a positive emotional relationship between peoples and their living environment (T. Mach Andro, 2013). Belonging to place is a symbolic relationship created by people toward a place, which gives a shared emotional and cultural meaning to a specific place so that constituting a basis for the perception of people and group toward an environment (Low&Altman, 1992). Belonging to a place is created, consciously or unconsciously, based on cognitive-emotional and behavioral interactions among the group's members as well as a social-physical place over time (Riley, 1992). The top-level of space human relationship is the sense of commitment and belonging of a person to space (DehBozorgi et al., 2016).

The sense of belonging is created based on two effective factors, including human and space, where a change in each of them affecting the extent of this belonging (Masoud et al., 2012). This sense is an essential factor in the formation of communication foundations of users and environment, and also is an important meaning in promoting quality of the human environment, that eventually will result in creating a high-quality environment (Foroughi et al., 2011).

1.4.1 Phenomenological approach

Sense of belonging means a robust bond between people and place along with their constituents; this factor will result in a deeper person-environment relationship which is developed over time (Relph, 1976).

An essential factor in the environment's conception is experience. Precepting a place is in direct relation with how human percept, where the longer this relationship is, the cognition and belonging of humans increase (Hidalgo & Hernandez, 2000). Relph believed that sense of place encompasses concepts beyond the attributes and physical elements. In this regard he referred to human aspects and called space a place that mixed with profound implications over time and is related with an unconscious dimension of human experience; this called sense of belonging or dependency, that is a sense with emotion (Tuan, 1974).

Relph considers place as a combination of natural and human-made objects, activities (performance) or meanings so that its performance can encompass a scale from a small room to a continent (Relph, 1976). In his opinion, a place has three attributes including physical range, activities and meanings by which it separates from space and converts to a place with a mental experience for the person. In her valuable book, Karmona embedded place concept in a tripolar triangle in which three factors including activity, form and individual imagination are placed on each side; and they create a place in an interactive triangle (Canter, 1977).
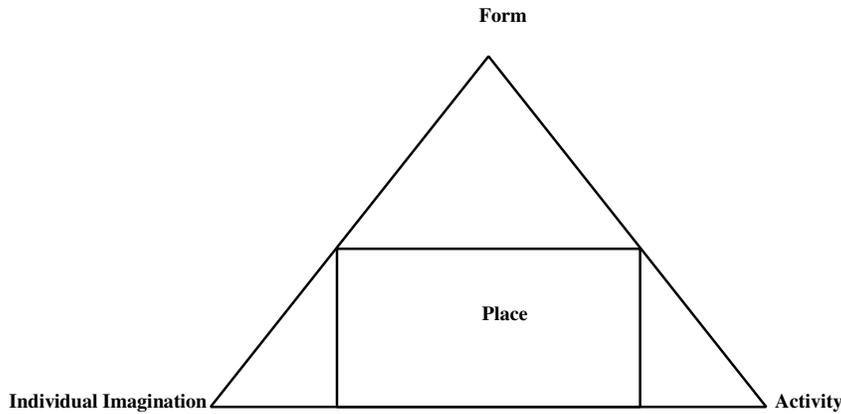
Figure 1: Conceptual model of place and its components. (Source: Canter, 1977)

Christian Norberg-Schulz is a famous Norwegian phenomenological architect who considers the place structure as landscape, space settlement and character. Also, he defines four human features regarding the environment: 1) emotional condition, 2) understanding, 3) conversation, 4) living with others. In his opinion, in a physical environment, meaning and living space are the factors for identity formation and belonging peoples to the environment, respectively. Also, he declares that features of this place lie in three factors including typology, place studies and morphology, and refers to the relationship between inside and outside of physical elements in design and organization of space. In his view, meaning and a sense that human gives to a place is created in relation with the others; also, human believe that this will improve the quality of place and it is the main factor of that he referred to as inside and outside (Schulz, 1980).

1.4.2. Environmental psychology approach

By studying the human environment and some of their daily behaviors, environmental psychologists have imposed a theorical basic called "place of behavior". The place of behavior refers to a small unit of a society which is a combination of an activity and a place that can achieves the essential functions of behavioral environment by a regular process (Motalebi et al., 2001). A place of behavior includes continuous activity, structural physical environment or territory, or alignment between activity and territory, time, schedule and controlling factors (Barker, 1969). In this knowledge, three human activities, including perception, feeling and cognition, are of great importance. Perception is a part of human's nature; feeling is a part of human's innate reaction to the environment; and cognition is a method to store and readout the information perceived from environment (Gifford, 2002). Different types of semantic attitudes regarding the human-place relationship in environmental psychology fall in three categories: 1) cogitative (human cognition toward the environment), social dimension (social interactions in environment) and emotional dimension (emotional dimension of human and environment).
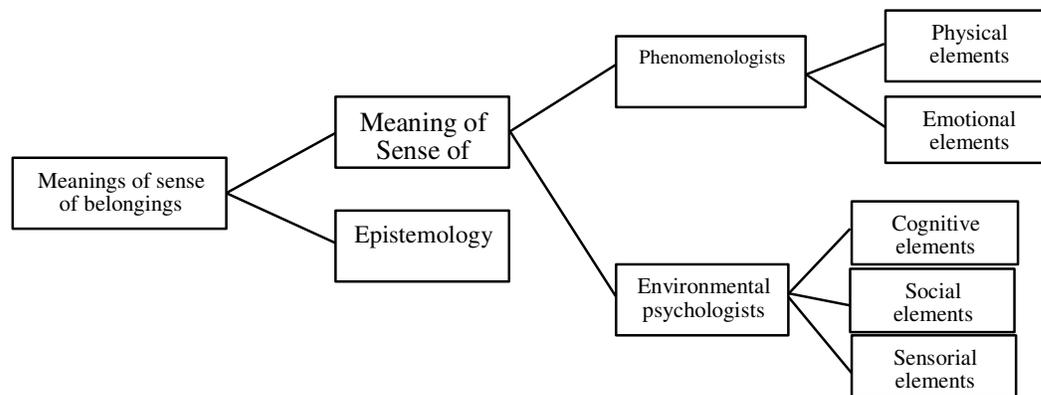

Figure 2: Different dimensions of sense of belonging according to cognitive research (Source:DehBozorgi et al, 2016).

In a set, the place can help individuals to develop the identity and sense of place and preserve them. Places are created when they are raised with interactions of human with its environment; places are created from spaces. Places are defined not only with a physical set but also with activities as well as social and psychological processes (Stedman, 2002). The place, in addition to specific physical locations, is some symbolic meaning, emotional and sentimental attachments a person have toward a special complex (Dominy, 2001).

In general, different types of semantic attitudes of human-place relationship in environmental psychology can be categorized into three approaches.

Cognitive approach: this approach emphasizes the role of human's cognition about the environment as an essential factor to create the meaning of sense of belonging. On this basis, environments with more awareness and cognition have more semantic load for individuals than the environments with less awareness and cognition.

Social approach: from the standpoint of this approach, the sense of belonging to an environment is the sum of social interactions' factors which took place in an environment. Based on this approach, the environment has common social information and symbols which human must interact with their environment by understand and decode them.

Emotional approach: this approach focuses on the emotional and sentimental relationship between human and place. According to this approach, interaction is a result of some kind of deep relationship between human and place; also, this approach states that meaning formation is in relation with human emotions' communication (Forouzandeh and Motalebi, 2010).

Harold Proshansky, believes that individual identity originates from place identity, which itself originates from the perception of cognition and emotions respect to a place. By focusing on place identity as an important base and communicational factor concerning the human, he emphasizes on the role of physical factors as a part of social elements in the environment. On this basis, interaction and communication of person to its environments as a physical element considered as a part of personal and mental identity (Proshansky, 1983). Rapoport, by emphasizing on the role of cultural and social components in formation of physical environment, proposed a "non-verbal communication" theory by which environment into a set of physical elements including static, semi-static, and dynamic; that based on his/her cultural codes, infers the specific concept and meaning form his/her environment and elements (Rapoport, 2005).

1.5 Factors forming sense of belonging

According to the description, from different approaches, about different elements of sense of belonging, the factors forming the sense of place in the design are categorized as follow.

1.5.1 Personal cognitive perception factors

Sense of belonging is composed of meanings, symbols and environmental qualities which are perceived, consciously and unconsciously, by a person or a group from a special place. This means that sense of belonging is generally based on the emotional relationship of a person with his/her environment; and in design, reveals itself as a physical appearance. Cognition and perception of a person from a place is an initial start for creating a sense of belonging. For this purpose, environments with physical distinction and readability are considered as desirable environments for users; in which better cognition and perception is made by an individual. Also, physical factors such as determining the privacy, property boundaries and neighborhoods are among the most important appropriate human perception of environment who explores and experiences the environment based on his/her competencies and motivations (Frouzandeh and Motalebi, 2011).

1.5.2 Social factors

What defines the physical environment as a social interaction bed, the common social, environmental symbols and also the environmental capability in providing and extending that, is his/her human needs' dimension. In fact, all humans have social needs, and in each pyramid of human needs, he/she is looking for belonging to friends and relatives. In such degree of sense of belonging, the environment is considered as a bed for cultural and social activities on which the individuals are interpreting the physical elements according to their perception and morphological system. This category of physical elements' factors, such as forms and color texture shapes, which all originated from social layers of environment, play a communicative role with users; that each is obtained according to culture throughout the history of environmental architecture and have their unique meaning (Frouzandeh and Motalebi).

1.5.3 Physical environmental factors

According to the theory of place of behavior in environmental psychology, this type of factors is divided into two important factories include activity and physics. Activities of an environment are defined based on social factors of actions and general interactions of humans. Also, physics, along with form components' organization and form variables are considered as two essential factors in forming a sense of belonging to an environment. The physical components addressed the formation of a sense of place through environmental differentiating as well as internal and external communication in spaces. The shape, size, color, texture, and scale, as to form features, each plays an effective role in forming a sense of place, and organization type and arrangement of physical elements are also another essential factors. On the other hand, through accommodation and capability to provides human needs in a place affecting the formation of a sense of place. In designing each of variable, factors such as color, shape, texture, scale, organization kind, and providing the activity type in spaces are of great importance; this represents the capability of an environment which flourish the performance form (Frouzandeh and Motalebi, 2011).
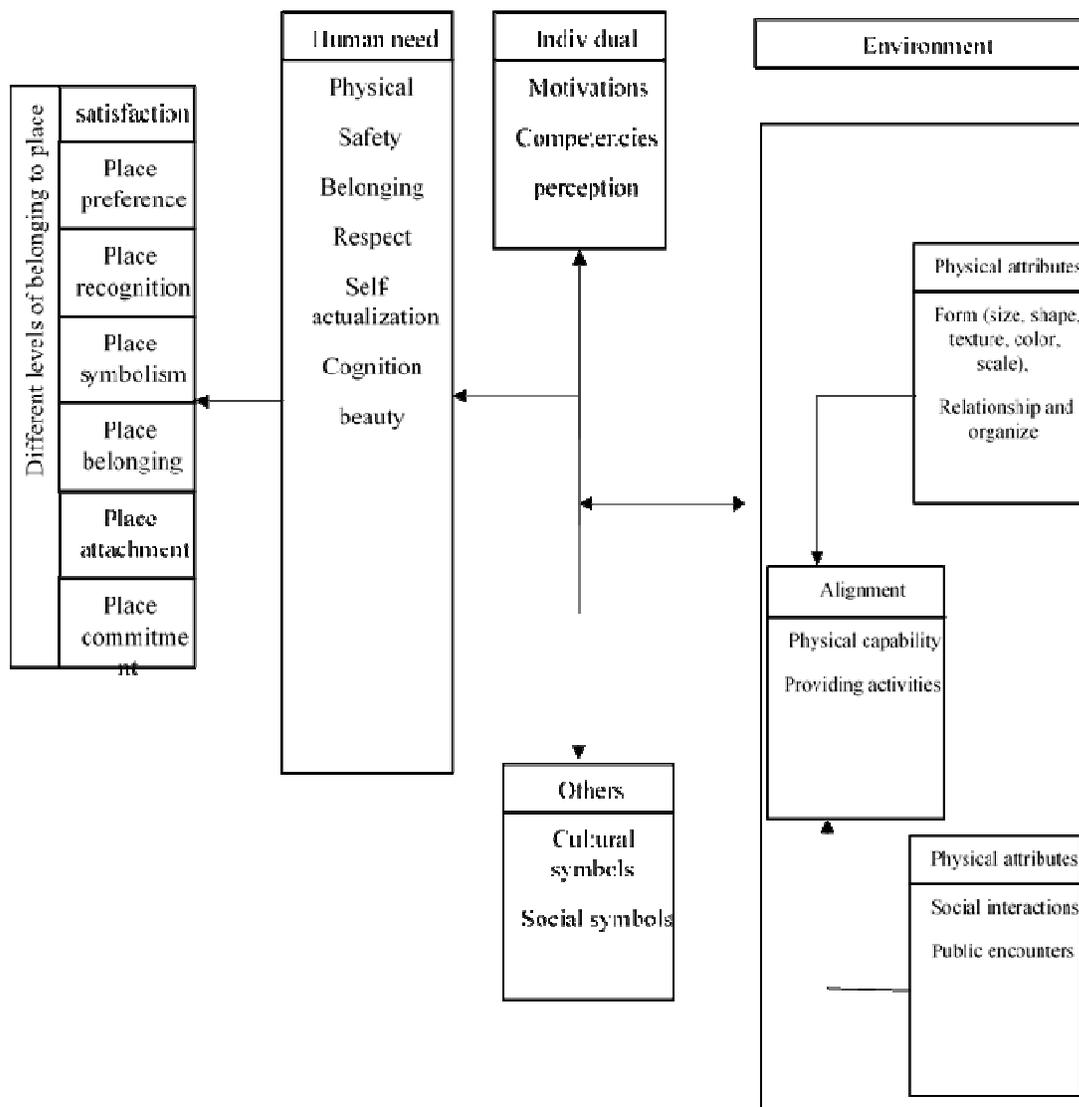

Figure 3: Models of affective environmental factors in the formation of a sense of belonging (Source:Forouzandeh and Motalebi et al,2011).

1.5.4. Vitality

In Dehkhoda dictionary, the term "vitality" defines as the mode and way to be joyful and lively. In Persian, there are several synonyms for the vitality; happiness, freshness, sense of life and satisfaction are among the most widely used synonyms. The general definition of vitality can be considered as capability of place to provide a wide range of activities and users (with different cultural, social and economic backgrounds) aim for diversifying social interactions and experiences, so that provides security, equality and convenience for all users. The vitality is as factors result from the attractiveness of spaces and users' satisfaction and the other factors mentioned above, which eventually results in creating a viable space.

Table 1: Factors Affecting Components (Source: Author)

Component	Sub-Index				
Perceptive	Beautifulness and attractiveness	Smell and sound	Value	Expectation from place	Sense of belonging and reminiscent of memory
Physical	Spatial quality	Dimensions and proportions		Form and size of spaces	Texture and decorations
	Circulation	degree of confinement		Human scale	Distances and color
Vitality	Happiness	Sense of satisfaction and safety		comfort	Interest in space and desire to presence freshness
Personal	Occupation satisfaction	Residence type		Residence period	Residence period
Functional	Applications of spaces	Functional activities		Spatial interactions	Residence period

Generally, it can be said that a review of the life and its daily activities cause a person to achieve inner satisfaction; to this end, the architecture can be a complementary and helpful tool.

2. Human perception

Perception is an intellectual phenomenon by which the sensorial experiences become meaningful, and through this, the human finds the relationships of affairs and meanings of objects. This action quickly takes place in the human mind so that simultaneously is seemed to be feeling. In such action, the sensorial experiences of concepts and its resultant imaginations contribute the individual motivation and a situation in which the perception take place (Nasiri et al., 2013).

The factors affecting the human perceptions include: 1) human condition in that instant and the atmosphere of the environment at the time of perception; 2) personal mood which is made of experiences of all past events of the viewer; 3) psychological-social factors which mean factors learned from experience; 4) personal experiences, age, gender, learning and training, cultural and physical factors (Nasiri et al., 2013).

In environmental psychology, the essential factor in enhancing the quality of humanenvironment mutual interaction is promoting the ability of semantic perception exists in the space around human (Nasiri et al., 2013).

2.1 Psychological approach of perception

The psychological approach of evaluation and perception, in general, can be addressed and studied in different fields which implies two common approaches:

2.1.1 Kellert theory

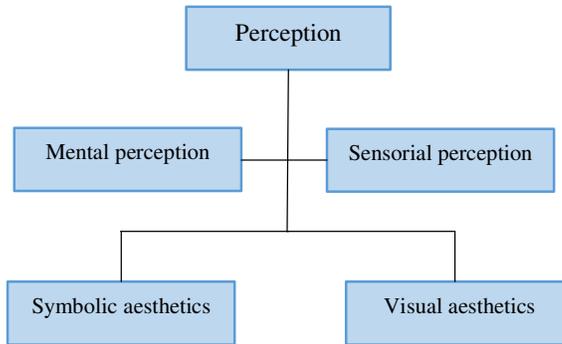Kellert considers the first approach of natural perception based on mental and sensory perception (Kellert, 2008).

Figure 4: Sensorial and mental approach to perception. (Source: GharehBagloo, 2014)
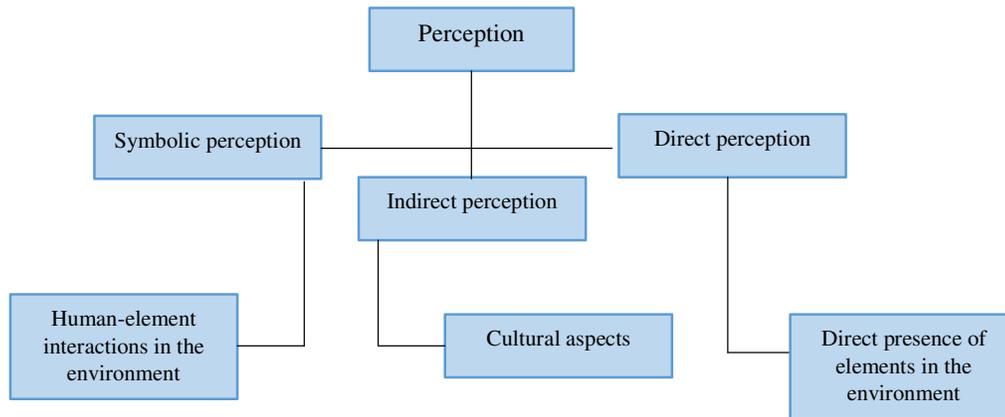
Figure 5: Natural perception approach (Source: GharehBagloo, 2014)

He also believes that the second approach of perception includes three aspects of perception, including direct, indirect and symbolic.

2.1.2 Donald Epilard's theory

The Donald Epilard's theory emphasizes mutual action toward the perception experience and considers the dynamic relationship between person and environment as the basis of analysis. In this theory, the perception has been considered as a mutual part in which the observer environment and perception have a mutual dependency. According to the theory, the perception has been divided into three categories, including practical, inferential, responsive (Leng, 2007).

Figure 6: Natural perception approach (Source: Leng , 2007)
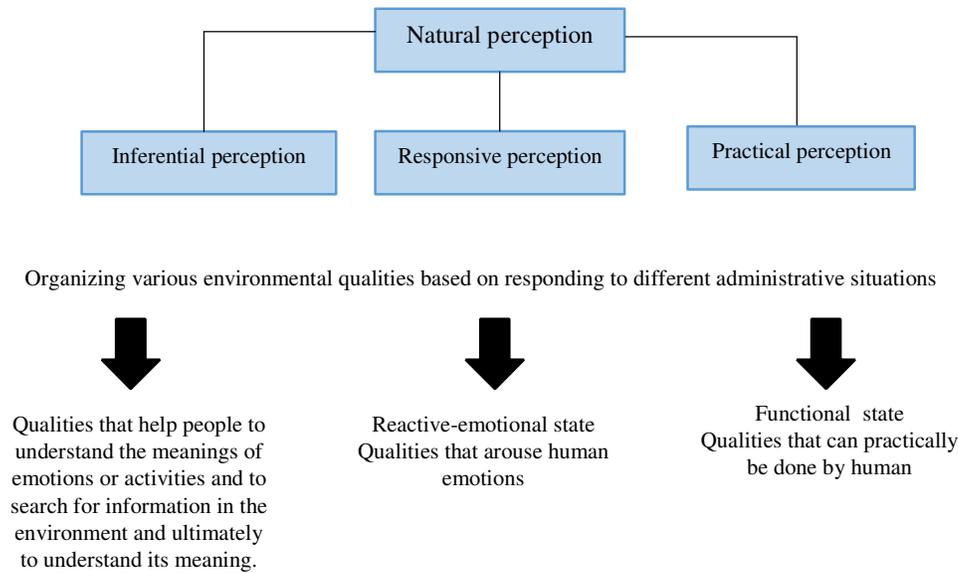
2.2 Architectural criteria of natural psychotropic in place perception

Today life has led to eliminating of many natural elements, and their completion's process through the sensorial perceptions of a person has also resulted in an increase in stress which doubled the need for a relaxation atmosphere. The ataraxia, emotionally and mentally, strongly depends on the environment. In terms of the perception of psychotropic criteria, the place is divided into three categories including form, activity and mental imagery or meaning, which have been investigated quantitatively and qualitatively. Finally, architectural (objective and subjective) components and also environmental components will result in relaxation in space. Environmental relaxation approach and their quantitative and qualitative criteria are in line with improving life quality and mental relaxation of the person (BalaliOskooi et al., 2018).
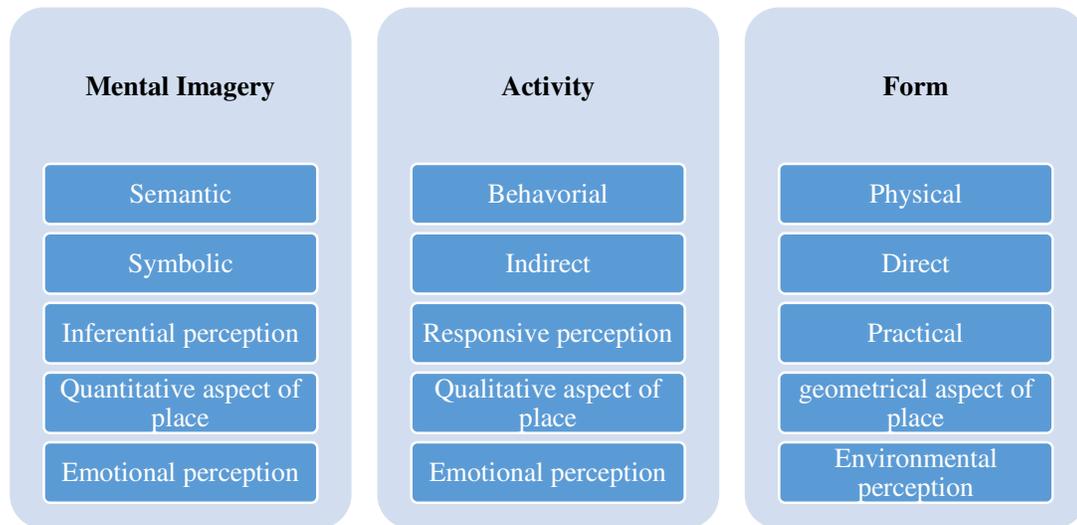

Figure 7: showing the relaxation criteria in place perception. (Source: author)

3. Quarantine period

3.1 Environmental psychology approach during the quarantine period

Given the definitions discussed above, we want to know whether the architecture can be helpful in the quarantine period in terms of psychology,encourage or even cheer to stay at home. Meaning and beautifulness of environmental architecture are two separate meaning and meanwhile are interconnected; which are in relation with emotional and psychological values of human which are perceived by sensorial perceptions. It can be said that "architecture is the art of trade-off between us and our world around, and such trade-off can occur through sensorial perceptions". Aesthetic science studies the sense of environment and individuals' position inside it. Meaning can be referred to as art value; since finding meaning and valuing are basically interconnected. Because of the existence of emotion and thought, the meaning is the common topic in architecture and liberal arts,including psychology (Emamghol, 2013).

Designers are rarely exposed to the user's moral. However, they considered different aspects of human in the design process; meanwhile, they rarely directly used psychology knowledge in building designs. If peoples do not like a special place, they will not live their easily and happily; whether this space is a public space, a shopping center and or a house. Therefore, deciding on living space which is pleasant and soothing is difficult. This is why psychology and psychologists are required.

3.2 Architecture in the quarantine period

Spatial cognition relates to study science and believes about spatial features of objects and events throughout the world. In the human body, the cognitive structure is a part of the mind which flourish from one brain and nervous system inside the body which exist in a physical and social world. The spatial features include place, size, distance, separation and connection, shape, pattern and motion. Some of the main mechanisms of the structural design affecting the human psyche include structural shape, negative and positive space, color, open space, light, acoustic, sound structure, green technique and landscape.

Peoples spend the best day of their life in an artificial environment that has an abnormal name called quarantine; most of the time, they directly connect their think about space to the architecture of their environment. As a result, the environment space of life is an integral part of health, life without stress, and this is the architecture's job. When psychologies and engineers are grouped, they can create such a healthy and joyful life. Now, according to all these problems and definitions, it can be concluded that architecture, whether at the time of quarantine or all other time, can put a very heavy load down over the society shoulder. However, the question raised that in what parts architecture can do this critical task through the psychological and encouraging way.

In such situations, the art of architecture can quickly solve this problem, but when we look at the structure of today's houses and given the definitions about problems of today's housing, it can be easily concluded that, in this period, what components can encourage human through architecture; and also what components can encourage people to stay at home and be helpful in such period. The architecture must be responsible for human needs regarding the environment so that expressing the emotions encompasses his/her believes. The human perception from the environment is one of the most central rationales in the environment process; so, perception relies on culture, value, perceptive thinking (Badri, 2020).

Therefore, architecture has a direct relationship with the human spirit and can have a greater effect. Today, we should look fresher at our environment. Human is not a simple physical being which only needs place; of course, his/her emotional responses are of great importance. As the knowledge of human toward environment extends, his/her field of vision about life and its facilities will also get extended. As a result, the human is seeking for creating order in his/her environment; and order is intended that can establishes the most compatibility with human nature and soul. The relationship between the most beautiful components always provide a desirable effect on human spirit; in fact, aesthetic aspects of order which are embedded in art have a unique meaning, and this is an accumulation of such aesthetic and human components which give the space such unique character. During the history, human has made some tools using proportions of the human body so that human can use them properly; this has resulted in the emergence of design science, and design science is constantly changing as the result of rapid growth in technology and urbanization. The reason why a model and or a design has received attention is because of the needs of the design's time (Badri, 2020).

As a result of the industrial revolution in 18th century and the years before the beginning of the WWI in 1914, the workers in rural areas and small towns invaded to industrial and large cities to work in factories. The owners of these factories have to provide houses which were compressed, without water and artificial light, and without

attention to health necessities. Living in dark and narrow valleys among the factories' smoke and noise and also poverty and sickness made these peoples be a group which has a carriage and later a car was dreamed for them. On the other side, there was the rich class of government, under the shadow of penetration and wealth, separates itself from the dense and pollutant areas of the cities and moved to renovated districts on the outskirts of cities. These districts have houses encompass a large green space and have facilities including gardens, maids, independent bedrooms, carriages, security systems and later infrastructures such as water pipes, sanitary facilities, sewers, gas, electricity, parking and even shops and churches. By getting away from the atmosphere of WWI, in 1918, concurrent with the formation of socialistic thoughts in dark and narrow alleys of the proletariat, modernism architects and managers have seen the lack of land, population density and low quality of life of central areas of the city as obstacles for development. This movement is seeking the solution in the combination of open and close urban spaces as well as applying new technology in construction. Their target was constructing residential blocks which had electricity, central heating, a room for the bathroom, and small space as a kitchen (Badri, 1399).

These fundamental definitions are exactly those problems which can direct us toward the answers so that we understand that a house must have some components by which human can sense belonging and cannot easily be left that environment. Now, these indices can be visual, spatial, safety, and so on. For example, it can be said that a person cannot tolerate a place where he/she cannot contact with it as well as gets enough morale. This is exactly the gap that exists in today houses, which can make our unconscious mind more tolerable toward the sense of place and feelings we can obtain from the environment.

4. Research Method

The present research is a descriptive-analytical study which is done using a field survey and with the help of a questionnaire and also face-to-face interviews with sample individuals (total 384 questionnaires were randomly distributed among peoples). The interview was of semiconstructed and open type by which the data, after analysis, were harvested. Also, the results were analyzed in the form of frequency distribution tables and also statistical tests.

4.1 Study type

In terms of purpose, the present research is an applied study. Also, in terms of nature, it is an analytical-descriptive study of correlation type which has been performed using quantitative and survey techniques. In terms of data analysis technique, the present study is quantitative research with statistical analysis. Also, in terms of time, it is a periodic study.

4.2 Data collection method

The data collection method is an integrated and necessary tool for performing research studies. Generally, such tools in research include questionnaires, interviewing, observation, and documents. Concerning the theoretical foundations of research, the data collection tool will be library studies that are of type checking secondary and organizational documents. Also, concerning the statistical data of research, the questionnaires tool has been used to recognize the relationship between research variables in order to collect data.

4.3 Questionnaire's tool

According to the studies done in this research, questionnaires' design is divided into five different elements, include physical, perceptional, functional, sense of vitality. This questionnaire has six items for the physical part; seven items for the perceptional part; seven items for the functional part; and five items for a sense of vitality part.

5. Descriptive findings

In following, a demographic description of the statistical sample has been presented. The response of the responders to the research's questions are shown in the following.

5.1 Frequency distribution of responders in terms of gender

The following table presents the frequency distribution of responders in terms of their gender (men or women). According to the results of the present research, of 384 responders, 203 were men, and 181 were women.

Table 2:Gender. (Source: author)

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender					
Valid	male	203	52.9	52.9	52.9
	female	181	47.1	47.1	100.0
	Total	384	100	100.0	

Figure 8:Gender. (Source: author)

5.2 Frequency distribution of responders in terms of marital

The following table presents the frequency distribution of responders in terms of their marital (single and married). According to the results of the present research, of 384 responders, 264 were married, and 120 were single.

Table 3: Marital status (Source: author)

		Frequency	Percent	Valid Percent	Cumulative Percent
Marital status					
Valid	single	120	31.3	31.3	31.3
	married	264	68.8	68.8	100.0
	Total	384	100.0	100.0	
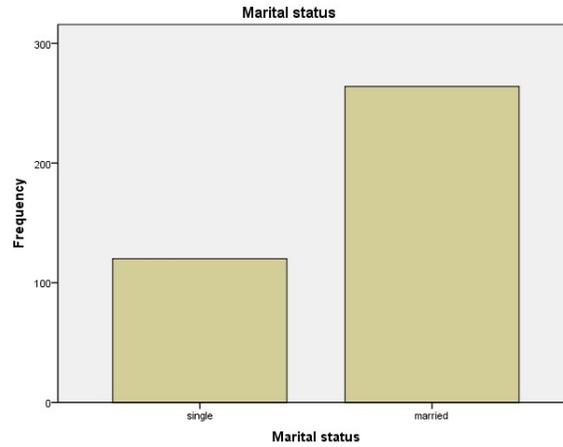
Figure 9: Marital status (Source: author)

5.3 Frequency distribution of responders in terms of residential location

The following table presents the frequency distribution of responders in terms of residential location. According to the results of the present research, of 384 responders, 366 lived in Tehran, and 18 lived in other cities.

Table 4: location in city (Source: author)

location in city					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	resident of Tehran	366	95.3	95.3	95.3
	resident of the city	18	4.7	4.7	100.0
	Total	384	100.0	100.0	

Figure 10: location in city (Source: author)
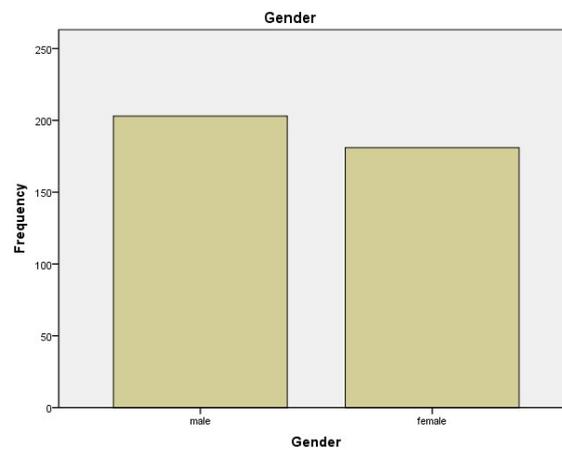
5.4 Frequency distribution of responders in terms of education

The following table presents the frequency distribution of responders in terms of education. According to the results of the present research, the maximum number of responders, i.e. 151, have diploma; 137 peoples have bachelor's degree; 42 peoples have high school and master of degrees education, and 12 peoples were graduated in doctorate.

Table 5: Education (Source: author)

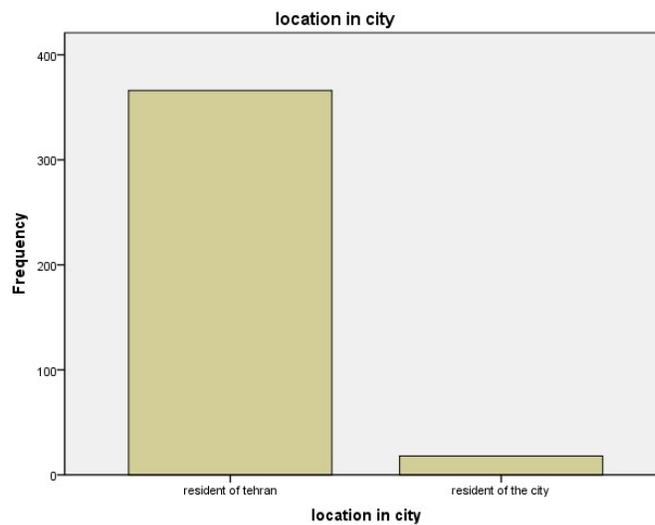| Education					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hight school	42	10.9	10.	10.9
	Diploma	151	39.3	39.	50.3
	Bachelor	137	35.7	35	85.9
	Master	42	10.9	10.9	96.9
	Doctorate	12	3.1	3.1	100.0
	Total	384	100.0	100.0	
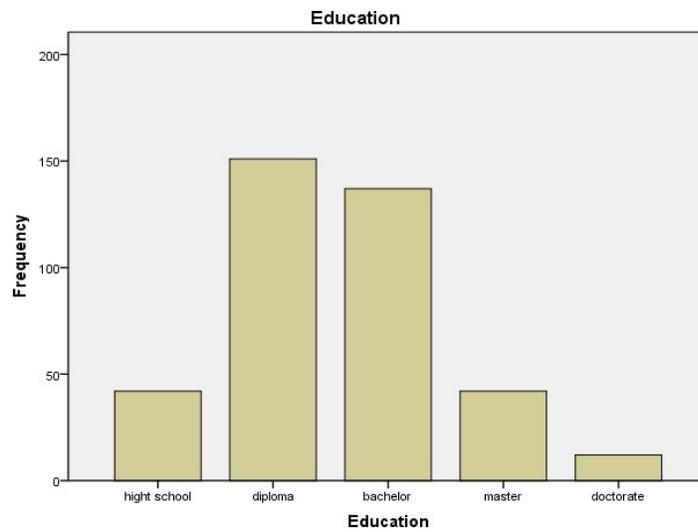
Figure 11: Education (Source: author)

5.5 Frequency distribution of responders in terms of the property of house

The following table presents the frequency distribution of responders in terms of the property of the house. According to the results of the present research, the maximum number of responders, i.e., 240, have private property; 66 peoples have a rental home; 60 peoples have mortgage home, and 18 peoples were lived in the organizational home.

Table 6: Property of the house (Source: author)

Property of the house					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	personal home	240	62.5	62.5	62.5
	mortgage home	60	15.6	15.6	78.1

rental home	66	17.2	17.2	95.3
organizational home	18	4.7	4.7	100.0
Total	384	100.0	100.0	
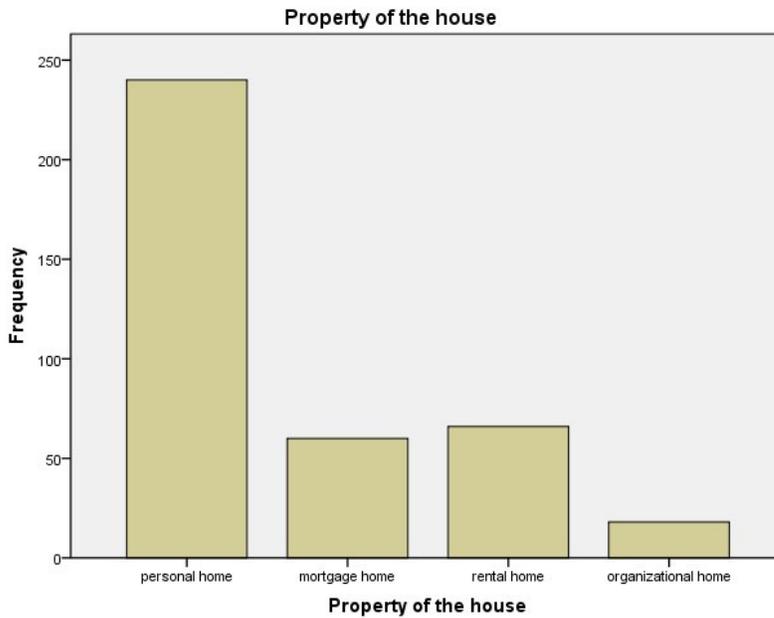
Figure 12: Property of the house (Source: author)

5.6 Frequency distribution of responders in terms of house area

The following table presents the frequency distribution of responders in terms of house area. According to the results of the present research, the maximum number of responders, i.e. 121, lived in a house with an area of 95-120m^2; 119 peoples have houses with area more than 120m^2; 66 peoples lived in houses with an area of 65-80m^2; 30 peoples were lived in houses with an area of less than 65m^2.

Table 7: House area (Source: author)

House area				
				Cumulative
		Frequency	Percent	Valid Percent	Percent
Valid	50 meter- 65 meter	30	7.8	7.8	7.8
	65meter-80meter	66	17.2	17.2	25.0
	80meter-95meter	48	12.5	12.5	37.5
	95meter-120meter	121	31.5	31.5	69.0
	120meter-120meters up	119	31.0	31.0	100.0
	Total	384	100.0	100.0	
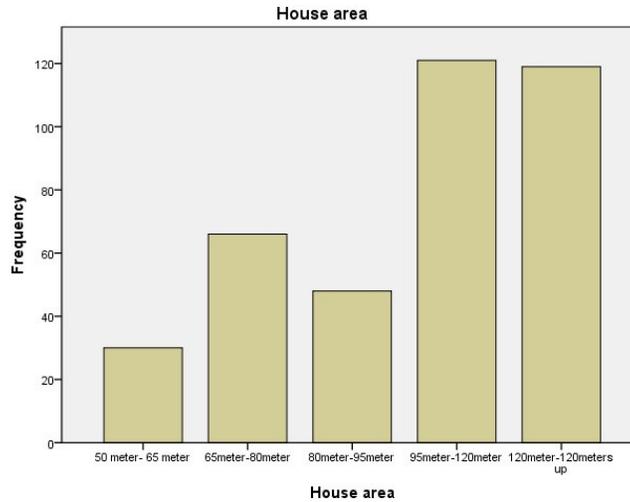
Figure 13: House area (Source: author)

5.7 Checking the sustainability of components

In the sustainability concept, Cronbach's alpha test is one of the most important indices. The desired quantity of Cronbach's alpha is more than 0.7. In this research, the internal correlation of Cronbach's alpha has been used to evaluate the sustainability of the questionnaire. Therefore, a questionnaire was designed for 5-point Likert scale questions, and the quantity of Cronbach's alpha for physical, perceptional, functional and vitality components was measured. According to the results, the maximum effect corresponds to the functional component with a value of 0.89 and vitality component, in second place, with a value of 0.84. Since these two components have a quantity of Cronbach's alpha in the range of 0.7-0.8, hence, they are desired in terms of Cronbach's alpha test and so have appropriate sustainability. Two other components, i.e. perceptional and physical components, have a coefficient equal to 0.75 and 0.71, respectively. Since these two components have Cronbach's alpha quantity in the range of 0.7-0.8, so the compatibility within the items was acceptable, and therefore, they are sustainable. 1. Effect of Cronbach's alpha on the physical component

1. The effect of Cronbach's alpha on the physical component

Table 8: Cronbach's Alpha. (Source: Author)

Physical component	
Cronbach's Alpha	Number of Items
0./712	6

2. Effect of Cronbach's alpha on perceptional component

Table 9: Cronbach's Alpha. (Source: Author)

Perceptional component	
Cronbach's Alpha	Number of Items
0/755	7

3. Effect of Cronbach's alpha on functional component

Table 10 Cronbach's Alpha. (Source: Author)

Functional component	
Cronbach's Alpha	Number of Items
0.89	7

4. Effect of Cronbach's alpha on vitality component

Table 11 Cronbach's Alpha. (Source: Author)

Vitality component	
Cronbach's Alpha	N of Items
0.84	5

5.8 Factors' affecting test

One question that has been addressed is that whether the effect of every discovered and validated factors during the quarantine crisis are statistically accepted or not. For this purpose, this hypothesis about discovered factors has been investigated. The descriptive results related to the factors' affecting test are listed in the following table. In each case, the average, standard deviation, and mean deviation related to the response of responders to the discovered effective factors are presented.

Table 12: Descriptive statistics of responders' response to the effective factors. (Source: Author)

Questions	N	Mean	Std. deviation	Minimum	Maximum
To what extent it can be claimed that architecture art (with creative design) can morally and psychologically help people during the quarantine period?	384	4.26	.758	2	5
To what extent an appropriate architecture for height can affects the residentials' spirit and prevention of depression during the quarantine?	384	4.17	1.015	1	5
To what extend the architectural design has been performed desirably based on people's morale during the quarantine?	384	4.53	.867	1	5
To what extend the architecture art, along with physicians' recommendations, can be useful for encouraging people to stay at home during a virus epidemic?	384	3.37	1.236	1	5
To what extend the appropriate architecture can affecting the sense of belonging (interest in the environment) of a house?	384	3.85	1.410	1	5

To what extent does proper design, so that all spaces are easily accessible, help people during house arrest?	384	3.92	.819	3	5
To what extent the appropriate natural lighting can be useful to encourage people for staying at home?	384	4.12	.819	2	5
To what extend having a view on your apartment affecting your comfort during the quarantine period?	384	4.38	.910	1	5
To what extend a beautiful landscape for an apartment (front apartment's facade and green space) can help people's tolerance during the quarantine?	384	4.01	1.117	1	5
To what extent dimensions and attachment of windows can be emotionally useful for people during the quarantine?	384	4.69	.848	1	5
To what extend the colors used for different surfaces can prevent the depression of peoples during a virus epidemy?	384	4.26	.990	1	5
To what extend the curve forms and preventing to use of sharp forms can be useful for mental relaxation of peoples during the quarantine?	384	4.47	.792	2	5
To what extent of applying artificial lightning along with creating proper forms on the roof's	384	2.99	1.375	1	5
To what extend designing multi-functional spaces (working rook, kid playing room) can reduce the mental problems during the virus epidemy?	384	4.12	.819	2	5
To what extend the apartment's entrance space next to the door by filtering the interior space instead of exterior space in order to disinfect purchased items can reduce the disease outbreak?	384	2.99	1.375	1	5
To what degree the house area (size of room, hall, etc.) can encourage people to stay at home during the quarantine?	384	4.01	1.117	1	5
To what extend having a terrace (balcony) can be useful in reducing the mental problems during the quarantine?	384	2.99	1.375	1	5
To what degree the presence of central management system, for reducing the entrance of peoples outside as well as delivering the purchased items on internet, can be effective to control the virus outbreak?	384	4.26	.990	1	5
To what extent desirable interior space design, for breeding apartment plants, is useful for preserving the morale during the quarantine period?	384	2.99	1.375	1	5
How effective can the design of public spaces such as a library (following hygienic guidelines) be in the days of house arrest?	384	2.99	1.375	1	5
To what extend having a suitable air conditioner can enhance the people's relaxation during the quarantine?	384	3.37	1.236	1	5
To what extent green space design (green roof and green perimeter) can be a comforter of your mood during the quarantine?	384	3.37	1.236	1	5
To what extend using suitable materials for reducing the disturbing noises in shared surfaces (floor, wall, and roof) can affecting the psychological comfort of residentials during the quarantine?	384	4.53	.867	1	5
To what extent roof's height design can be effective in creating a succulence and exhilaration mood during the home detention?	384	3.37	1.236	1	5
To what extent designing places inside the residential complexes (by preserving the social distancing), for sports activities can encourage peoples to stay at home?	384	3.85	1.410	1	5

One sample t-test is used to test a hypothesis of equivalence of a sample's average ($\bar{x}$) with the population mean (μ) that has a normal distribution. The purpose of performing this test is to measure the equivalence of estimated sample ($\bar{x}$) with population mean (μ).

In the present research, the cut-point population mean equal to 3 has been considered. Since data on Likert scale were collected from 1 (minimum average) to 5 (maximum average), the population mean of 3 has been considered; means that if there is a meaningful difference between the estimated average and the value 3, it can be said that the discovered factors have a great influence on houses' architecture during the quarantine period. The results of one sample t-test for every factor are listed in the following table. According to the obtained results and the estimated level of significance for the t-test statistic, it can be said that the effectiveness of all discovered factors is accepted.

According to the results obtained, because the p-value is less than the significance level of 0.05, we concluded that there is a significant difference between the questions of the questionnaire, and in the view of responders, the questions are not same in terms of value and importance. The ranking of importance and values of questions is as follows.

Table 13:T-Test. (Source: Author)

Questions	t	df	Sig. (2tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
To what extent it can be claimed that architecture art (with creative design) can morally and psychologically help people during the quarantine period?	32.592	384	.000	1.260	1.18	1.34
To what extent an appropriate architecture for height can affects the residentials' spirit and prevention of depression during the quarantine?	22.591	384	.000	1.169	1.07	1.27
To what extend the architectural design has been performed desirably based on people's morale during the quarantine?	34.688	384	.000	1.534	1.45	1.62
To what extend the architecture art, along with physicians' recommendations, can be effective for encouraging people to stay at home during a virus epidemy?	5.911	384	.000	.372	.25	.50
To what extend the appropriate architecture can affecting the sense of belonging (interest in the environment) of a house?	11.800	384	.000	.849	.71	.99
To what extent suitable architecture, so that easily access to all spaces, can help the residentials during the quarantine?	21.950	384	.000	.919	.84	1.00
To what extent the appropriate natural lightening can be useful to encourage people for staying at home?	26.837	384	.000	1.122	1.04	1.20
To what extend having a view on your apartment affecting your comfort during the quarantine period?	29.753	384	.000	1.380	1.29	1.47
To what extend a beautiful landscape for an apartment (front apartment's facade and green space) can help people's tolerance during the quarantine?	17.724	384	.000	1.010	.90	1.12
To what extent dimensions and attachment of windows can be emotionally useful for people during the quarantine?	39.060	384	.000	1.688	1.60	1.77
To what extend the colors used for different surfaces can prevent the depression of peoples during a virus epidemy?	25.067	384	.000	1.266	1.17	1.36

To what extend the curve forms and preventing to use of sharp forms can be useful for mental relaxation of peoples during the quarantine?	36.387	384	.000	1.469	1.39	1.55
To what extent of applying artificial lightnings along with creating proper forms on the roof's surface can be effective on the people's morale during the home detention?	-.111	384	.911	-.008	-.15	.13
To what extend designing multi-functional spaces (working rook, kid playing room) can reduce the mental problems during the virus epidemy?	26.837	384	.000	1.122	1.04	1.20
To what extend the apartment's entrance space next to the door by filtering the interior space instead of exterior space in order to disinfect purchased items can reduce the disease outbreak?	-.111	384	.911	-.008	-.15	.13
To what degree the house area (size of room, hall, etc.) can encourage people to stay at home during the quarantine?	17.724	384	.000	1.010	.90	1.12
To what extend having a terrace (balcony) can be useful in reducing the mental problems during the quarantine?	-.111	384	.911	-.008	-.15	.13
To what degree the presence of central management system, for reducing the entrance of peoples outside as well as delivering the purchased items on internet, can be useful to control the virus outbreak?	25.067	384	.000	1.266	1.17	1.36
To what extent desirable interior space design, for breeding apartment plants, is useful for preserving the morale during the quarantine period?	-.111	384	.911	-.008	-.15	.13
To what extent the design of public spaces such as the library (by preserving social distancing) can be effective during the home detention?	-.111	384	.911	-.008	-.15	.13
To what extend having a suitable air conditioner can enhance the people's relaxation during the quarantine?	5.911	384	.000	.372	.25	.50
To what extent green space design (green roof and green perimeter) can be a comforter of your mood during the quarantine?	5.911	384	.000	.372	.25	.50
To what extend using proper materials for reducing the disturbing noises in shared surfaces (floor, wall, and roof) can affecting the psychological comfort of residentials during the quarantine?	34.688	384	.000	1.534	1.45	1.62
To what extent roof's height design can be effective on creating a succulence and exhilaration mood during the home detention?	5.911	384	.000	.372	.25	.50
To what extent designing places inside the residential complexes (by preserving the social distancing), for port activities can encourage peoples to stay at home?	11.800	384	.000	.849	.71	.99

5.10 Factors ranking

In the tables mentioned above, the average rank related to each factor and also the final rank of each factor have been presented in comparison with other factors. As it is evident in the table, there is a significant difference between the average rank of factors in the 31-item questionnaire. According to the ranking from the highest to lowest order, this difference has been presented in the rank column. Despite there is a difference between the rank of these factors, it can be said that only this difference is significant when the results of the Friedman test are meaningful. In the following table, the results related to quantity significance of q- square in Friedman test has been presented with the significance level.

Table 14: Friedman test -The average rank and ranking the effective factors (Source: Author).

Rank	Question	N	Mean	Std. Deviation	Minimum	Maximum
q16	To what extent dimensions and attachment of windows can be emotionally useful for people during the quarantine?	384	4.69	.848	1	5
q9	To what extend the architectural design has been performed desirably based on people's morale during the quarantine?	384	4.53	.867	1	5
q29	To what extend using good materials for reducing the disturbing noises in shared surfaces (floor, wall, and roof) can affecting the psychological comfort of residentials during the quarantine?	384	4.53	.867	1	5
q18	To what extend the curve forms and preventing to use of sharp forms can be useful for mental relaxation of peoples during the quarantine?	384	4.47	.792	2	5
q14	To what extend having a view on your apartment affecting your comfort during the quarantine period?	384	4.38	.910	1	5
q17	To what extend the colors used for different surfaces can prevent the depression of peoples during a virus epidemy?	384	4.26	.990	1	5
q24	To what degree the presence of central management system, for reducing the entrance of peoples outside as well as delivering the purchased items on internet, can be effective to control the virus outbreak?	384	4.26	.990	1	5
q7	To what extent it can be claimed that architecture art (with creative design) can morally and psychologically help people during the quarantine period?	384	4.26	.758	2	5
q8	To what extent appropriate height design can be effective in creating a succulence and exhilaration mood during the home detention?	384	4.17	1.015	1	5
q13	To what extent the appropriate natural lightening can be useful to encourage people for staying at home?	384	4.12	.819	2	5
q20	To what extend designing multifunctional spaces (working rook, kid playing room) can reduce the mental problems during the virus epidemy?	384	4.12	.819	2	5
q15	To what extend a beautiful landscape for an apartment (front apartment's facade and green space) can help people's tolerance during the quarantine?	384	4.01	1.117	1	5
q22	To what degree the house area (size of room, hall, etc.) can encourage people to stay at home during the quarantine?	384	4.01	1.117	1	5
q12	To what extent suitable architecture, so that easily access to all spaces, can help the residentials during the quarantine?	384	3.92	.819	3	5
q11	To what extend the appropriate architecture can affecting the sense of belonging (interest in the environment) of a house?	384	3.85	1.410	1	5
q31	To what extent designing places inside the residential complexes (by preserving the social distancing), for sport activities can encourage peoples to stay at home?	384	3.85	1.410	1	5

q10	To what extend the architecture art, along with physicians' recommendations, can be affective for encouraging people to stay at home during a virus epidemy?	384	3.37	1.236	1	5
q27	To what extend having a suitable air conditioner can enhance the people's relaxation during the quarantine?	384	3.37	1.236	1	5
q28	To what extent green space design (green roof and green perimeter) can be a comforter of your mood during the quarantine?	384	3.37	1.236	1	5
q30	To what extent roof's height design can be effective in creating a succulence and exhilaration mood during the home detention?	384	3.37	1.236	1	5
q19	To what extent of applying artificial lightnings along with creating proper forms on the roof's surface can be effective on the people's morale during the home detention?	384	2.99	1.375	1	5
q21	To what extend the apartment's entrance space next to the door by filtering the interior space instead of exterior space in order to disinfect purchased items can reduce the disease outbreak?	384	2.99	1.375	1	5
q23	To what extend having a terrace (balcony) can be useful in reducing the mental problems during the quarantine?	384	2.99	1.375	1	5
q25	To what extent desirable interior space design, for breeding apartment plants, is useful for preserving the morale during the quarantine period?	384	2.99	1.375	1	5
q26	To what extent the design of public spaces such as the library (by preserving social distancing) can be effective during the home detention?	384	2.99	1.375	1	5

Table 15: Friedman test -The average rank and ranking the effective factors (Source: Author).

Rank	Questions	Mean Rank
q16	To what extent dimensions and attachment of windows can be emotionally useful for people during the quarantine?	18.59
q9	To what extend the architectural design has been performed desirably based on people's morale during the quarantine?	17.27
q29	To what extend using good materials for reducing the disturbing noises in shared surfaces (floor, wall, and roof) can affecting the psychological comfort of residentials during the quarantine?	17.27
q18	To what extend the curve forms and preventing to use of sharp forms can be useful for mental relaxation of peoples during the quarantine?	16.65
q14	To what extend having a view on your apartment affecting your comfort during the quarantine period?	16.03
q17	To what extend the colors used for different surfaces can prevent the depression of peoples during a virus epidemy?	15.63
q24	To what degree the presence of a central management system, for reducing the entrance of peoples outside as well as delivering the purchased items on the internet, can be effective to control the virus outbreak?	15.63
q7	To what extent it can be claimed that architecture art (with creative design) can morally and psychologically help people during the quarantine period?	15.51
q8	To what extent appropriate height design can be effective in creating a succulence and exhilaration mood during the home detention?	15.13

q13	To what extent the appropriate natural lightening can be useful to encourage people for staying at home?	14.38
q20	To what extend designing multi-functional spaces (working rook, kid playing room) can reduce the mental problems during the virus epidemy?	14.38
q15	To what extend a beautiful landscape for an apartment (front apartment's facade and green space) can help people's tolerance during the quarantine?	14.02
q22	To what degree the house area (size of room, hall, etc.) can encourage people to stay at home during the quarantine?	14.02
q12	To what extent suitable architecture, so that easily access to all spaces, can help the residentials during the quarantine?	13.83
q11	To what extend the appropriate architecture can affecting the sense of belonging (interest in the environment) of a house?	13.83
q31	To what extent designing places inside the residential complexes (by preserving the social distancing), for sport activities can encourage peoples to stay at home?	12.89
q10	To what extend the architecture art, along with physicians' recommendations, can be useful for encouraging people to stay at home during a virus epidemy?	10.18
q27	To what extend having a suitable air conditioner can enhance the people's relaxation during the quarantine?	10.18
q28	To what extent green space design (green roof and green perimeter) can be a comforter of your mood during the quarantine?	10.18
q30	To what extent roof's height design can be effective in creating a succulence and exhilaration mood during the home detention?	10.18
q19	To what extent of applying artificial lightnings along with creating proper forms on the roof's surface can be effective on the people's morale during the home detention?	7.85
q21	To what extend the apartment's entrance space next to the door by filtering the interior space instead of exterior space in order to disinfect purchased items can reduce the disease outbreak?	7.85
q23	To what extend having a terrace (balcony) can be useful in reducing the mental problems during the quarantine?	7.85
q25	To what extent desirable interior space design, for breeding apartment plants, is useful for preserving the morale during the quarantine period?	7.85
q26	To what extent the design of public spaces such as library (by preserving social distancing) can be effective during the home detention?	7.85

The results presented in the following table show that, for ranking the effective factors based on the significance level of Sig=0.000, the Friedmann test is significant, and therefore the difference in observed mean rank is significant.

Table 16: Results of the Friedman test for ranking effective factors. (Source: Author).

Frequency	384
Qi-square statistics	2549.740
Degree of freedom	24
Significance level	.000

6. Conclusions

The purpose of the present research was studying the importance of architectural design suitable for residential space during the quarantine period. With a little thinking and study history, it can be concluded that there is possible to see quarantine for all peoples. Therefore, all organs[5] , including physicians, nurses, and architectures to tackle this problem and prevent the disease from breaking out throughout the world. On the architecture side, by presenting architectural solutions and deploying more people in the house, space can be provided to deliver more comfort to residential; so, the sensitivity to this topic should be very high. As can be seen from the obtained results and statistics, it can be turned out that with little attention to changes of peoples' spirit, whether in the quarantine period or the times people stayed at home, we can help people to enhance their spirit.

This paper discovering the factors affecting the house space to be settled in a fixed space for a long period and also encouraging them to stay at their residential complex was addressed. In the investigation performed, the results show that for ranking effective factors based on the significance level of Sig= 0.000, the Friedman test is the significance, and therefore, the observed difference in rank average is significant. Hence, it can be concluded that the ranking the effective factors reveals the significant difference in terms of importance and effectiveness. Among the factors studied, some factors that have the highest effectiveness are listed as follows.

Table 17: Factors with highest effectiveness rank. (Source: Author).

Row	Factors with highest effectiveness rank
1	To what extent dimensions and attachment of windows can be emotionally useful for people during the quarantine?
2	To what extend the architectural design has been performed desirably based on people's morale during the quarantine?
3	To what extend using good materials for reducing the disturbing noises in shared surfaces (floor, wall, and roof) can affecting the psychological comfort of residentials during the quarantine?
4	To what extend the curve forms and preventing to use of sharp forms can be useful for mental relaxation of peoples during the quarantine?
5	To what extend having a view on your apartment affecting your comfort during the quarantine period?
6	To what extend the colors used for different surfaces can prevent the depression of peoples during a virus epidemy?
7	To what degree the presence of central management system, for reducing the entrance of peoples outside as well as delivering the purchased items on internet, can be effective to control the virus outbreak?
8	To what extent the appropriate natural lightening can be useful to encourage people for staying at home?
9	To what extend designing multi-functional spaces (working rook, kid playing room) can reduce the mental problems during the virus epidemy?
10	To what extend a beautiful landscape for an apartment (front apartment's facade and green space) can help people's tolerance during the quarantine?

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