Creative city design / Vol. 7, No. 2, 2024, 75-94

Explaining The Components Of Decongesting Architecture In The Residential Complexes Of Mashhad Metropolis By Controlling The Tension-Causing And Stressful Indicators

Ali Khourshahi [1], Gholamhosein Naseri [2*], Mohammadreza Vaezi [3], Mohammadhosein Abedi[4]

1. PhD student, Department of Architecture, Damghan Branch, Islamic Azad University, Damghan, Iran.
2. Department of Architecture, Damghan Branch, Islamic Azad University, Damghan, Iran.
3. Department of Architecture, Damghan Branch, Islamic Azad University, Damghan, Iran.
4. Department of Architecture, Damghan Branch , Islamic Azad University, Damghan, Iran.

Submit Date: 26 June 2023, Revised Date: 12 September 2023, Accepted Date: 26 November 2023
DOI: 10.30495/ccd.2023.1989921.1218

Abstract

Today, living in big cities has become such a challenge that a citizen struggles with many problems to meet his basic needs; including job security, obtaining the necessities of life, emotional issues and problems, obtaining housing or renting, etc. Today, the housing challenge has taken on new dimensions due to population growth, changing lifestyles, decreasing land in big cities, rampant inflation in house prices, etc. Assuming that in big cities, apartment living is inevitable, considering the aforementioned problems, the conditions and space of buildings should be designed in such a way that their residents face the least stress and mental tension from the architectural body. This article attempts to extract an optimal solution for the problems of apartment living of city dwellers by entering the field of environmental psychology, so as to at least reduce the tensions and stresses of living in these spaces by a few percent. The present article is descriptive-analytical in terms of methodology, and in terms of the type of data for analysis, this research is a qualitative research in the first phase. In the qualitative data analysis stage, the content analysis method is used. Since in this article, the level of capabilities of apartment residents and their perception of the space in buildings is measured, therefore, in the survey area, the way residents express and perceive the space between buildings is exposed to interviews, pre-tests, exercises, and interviews. In terms of purpose, this research is an exploratory research in the qualitative phase and an explanatory research in the quantitative phase. The purpose of writing this article is to explain the stress-generating components that reduce the stress of apartment living and create conditions for people to live longer in metropolises with the help of flexible (multi-purpose) housing design. The results of this study show that sensory components such as density, stress, personal space, peace, and crowding, as well as physical components such as building structure, height, gender, age, and neighborhood, play a significant role in this issue.

Keywords: Environmental Design, Congested Architecture, Tension and Stress, Residential Complex, Mashhad City.

*Corresponding author: naseri_8224@yahoo.com

This article is taken from Ali Khourshahi's PhD dissertation entitled "Explaining the design methods of decongesting architecture by controlling the tension-causing and stressful components in the residential complexes of Mashhad." guided by Dr. Gholamhosein Naseri and Dr. Mohammadreza Vaezi and advised by Dr. Mohammadhosein Abed

1. Introduction

In recent years, perhaps the main problem for city dwellers was to provide a house or shelter, and doing this was enough, but now the housing challenge is due to population growth, lifestyle changes, land shortage in big cities, and unbridled inflation in house prices. And... it has taken on new dimensions. Governments and municipalities have set the agenda of building apartments or selling high-rises in cities to compensate for part of the problems, such as lack of space and shrinking of houses, etc. That these phenomena themselves bring new and invisible problems with them, which threaten people's psyche and inner life in return for dealing with the material things of people's lives. Charles Jenks states in the book Death of Modern Architecture: the stress caused by living in an apartment leads to a reduction in life and heart and brain attacks, this research proves the importance of this article. Fortunately, the discussion of environmental psychology has been started in the world since the last century with regard to the environmental and psychological needs of humans, so that in 1943, Egon Bransonik used the term environmental psychology for the first time, and until today it is a pure, new science. and applied throughout architecture and psychology universities are being taught. In environmental psychology, attention is paid to social and cultural customs, values and standards. "Social density" (the result of excessive presence of people in the space) causes crowding, that is, the physical stimulus leads to the involvement of the mental stimulus. Some researchers believe that living in an apartment or a residential unit is the main reason for this confusion, if this issue is the cause of one third of these tensions, the remaining two thirds appear when people share apartments with others in cases such as personal spaces, Territories and boundaries are in conflict. Therefore, the purpose of this article is to identify the sensory and physical components that are effective in the common and public spaces of residential buildings, to reduce tensions and confrontations by establishing communication between members, and to design the building in such a way that First, people's personal spaces should be preserved, and secondly, the residents of a residential complex can reduce their stress and mental tensions by establishing visual and verbal communication, controlled and acceptable movements in common spaces.

Summary of theoretical research literature

There are two main forms of density that can be experimentally manipulated: social density and spatial density. Social density changes when different people are placed in the same physical location, while spatial density changes when the same people are in different physical locations. take place In other words, one deals with the number of people and the other deals with the situation [6,7,31]. Congestion is a mental and psychological state that leads to negative emotions. Crowding occurs when a person sees many people in the same environment. Of course, many things such as personality, relationships between people, and situational factors such as heat, noise, smell, and work that must be done in the environment affect the perception of crowding. Nevertheless, crowding is probably the most influential factor in determining the amount of crowding that people feel [5]. People's gender is an important factor in predicting the response to high density. Other factors also affect the relationship between density and crowding [22]. Swarming theories are still in their infancy and various theories are competing for scientific status, most of them seem to be acceptable and have some research support, but none of them are completely satisfactory. Congestion patterns are divided into 5 theories:

1- Ecological model: Although this model is not specifically a theory of crowding, Roger Barker's (1960) ecological psychology model states that for proper functioning, a certain number of individuals must be present in behavioral situations to maximize the efficiency of the environment. The presence of too few individuals leads to instability and excessive pressure for individuals in that environment. Another theory in the framework of ecology is the social physics theory of Nolsen (1983), this model emphasizes the dispersion (distribution) of individuals in a behavioral situation rather than the distances between individuals. For example, it is important to know whether the people around the individual are just present or actively observing and interacting with

him. Also, the visual and auditory constraints present in the situation affect the perception of crowding. This view is useful in predicting when observers will evaluate situations as crowded or deserted.

2- Sensory overload: Crowding models differ in some respects, but all suggest that high-density environments expose individuals to sensory information that exceeds their optimal stimulus intensity and ability to process information [10]. Individuals under overload conditions tend to reduce their interactions with others as social demands increase. This may explain much of the rude and unfriendly behavior in large cities [33]. High density in living environments is associated with high psychological stress and low social support, and those with high social support show the least psychological distress [14].

3- Intensity-density model: The density-intensity model, proposed by Friedman (1975), is one of the few theories of crowding that suggests that the effects of low density on humans are not always negative. According to this theory, density itself has neither good nor bad effects on individuals, but it intensifies any individual's response to the situation. Thus, if a person finds himself in a pleasant situation (for example, a party or a sporting event), the presence of others may make the situation more pleasant. On the other hand, unpleasant situations, such as last-minute Christmas shopping or standing in a class registration line, become more annoying as the number of people increases. Turning up the volume of your favorite music may be enjoyable, but it may be annoying and aversive to your neighbor [16].

4- Model on arousal: Some theories of crowding rely on evidence that high crowding is arousing for some reason. That is, high levels of arousal affect complex tasks rather than simple ones and disrupt normal social phenomena such as interpersonal attraction, aggression, helping behavior, and nonverbal communication. In some ways, arousal patterns are related to patterns of sensory overload, because increased levels of arousal are a byproduct of the sensory overload that occurs in a crowded situation [21]. There is evidence that people feel less crowded when they think their arousal is coming from other sources, such as the movie they are watching or even the subtle noise around them [47].

5- Control patterns: The final group of crowding theories are control paradigms, a view that is becoming increasingly influential. Many of the earlier theories were based on the concept of personal control, i.e. the amount of freedom an individual has in their decisions and behaviors. Personal control can also be defined as having a sense of cognitive control, i.e. the sense that an individual feels they know and have enough information about their environment to be able to control what is happening. Control paradigms argue that high crowding affects human behavior and emotions because it removes the individual's sense of control and causes crowding [43].

Table 1: Summary of theories related to crowding and density; Source, author, 1402

	Name of non-architect theorist	Congestion and Density Theories
1	Stokels et al,2002	Congestion is a mental and psychological state that leads to negative emotions.
2	Friedman (1985)	Animals together have less excitement, more active behavior, and larger adrenal glands than animals alone.
3	Roger Barker's 1986	Research has shown that although animal studies have been very useful ،their results cannot be applied directly to humans because humans behave more socially.
4	Luo et al 2006	High density has reduced aggression under competitive conditions; congestion in competitive conditions leads to withdrawal rather than aggression.
5	Harries,K.D and Stadler (1988)	Compared to women in crowded situations, men experience more intense emotions such as aggression, withdrawal, higher pressure, and evaluate themselves and others negatively.
6	Friedman et al (1985)	Men in crowded groups retire, while women showed more affection and eye contact, the swarm tested in the feminine community had a more favorable experience than the male group.
7	Grutter (2014)	In a long-term prison study, it was confirmed that high blood pressure was associated with high densities and that this feeling was associated with a lack of control and stability, and that prisoners who were in

		prison for longer periods had a greater sense of control over the environment, which led to lower psychological stress.
8	Bell. A et al (1973)	Residents of apartment residences felt less congested than residents of public hostels due to the cohesion of groups in apartment dormitories.
9	Taylor.R (2002)	The architectural aspects of buildings are the main factors controlling people's sense of congestion in environments.
10	Parrott,et al (1989)	Individuals under overload conditions reduce their communication with others as social demands increase, which explains many of the most unfriendly and rude behaviors in metropolitan areas.
11	Kaplan,S (1987)	The effects of high density are not always negative on humans, such as a sporting event in a stadium or a party.
12	Jones A (1996)	Freedom of action in decision-making and behavior causes control of the feeling of congestion because knowing the environment and freedom of action gives the person a sense of surrounding, controlling the environment.
13	Lang (2017)	Helplessness theory is based on the fact that when a person experiences high density, there is an expectation that his actions and actions have no effect on what happens to him.
14	MacAndrew (2008)	Congestion patterns are divided into 5 items: 1) Vernacular 2) Sensory overload 3 Density Intensity 4 Arousal 5 Control

Table 2: Summary of theories related to territory; Source, author, 1402

	Theorist	**Territory Theory**
1	Altman (1985)	Solitude is selective control over oneself or group so seclusion is not just the expulsion of others, but is a limiting control process.
2	Gifford (1999)	Seclusion or Domain Seeking 4 Modes: 1) Loneliness 2) Intimacy 3) Anonymity 4) Reserved
3	Luo et al (2006)	Being territorial makes autonomy and dignity and thus provides an emotional relief that the non-private conditions are deemed inappropriate.
4	McAndrew (2015)	Being territorial and coherence of personal space are very essential to people's lives it is the fundamental mechanism that ensures the influence of the factors of everyday life.
5	Lorenz (1966)	Animals are strong and sensitive in many domains, but animals such as mice are more resilient with more human indices.
6	Hardie,G.J (1989)	The priority effect is very effective in housing students who presented or worked in their rooms performed much more strongly than others in different places ،increasing the sense of being host and home to success.
7	Ittelson,W.H (1989)	Inability to have territory leads to psychological pressure.
8	Kent .S (1991)	A person's attachment to the realm intensifies with age.
9	Altman (2016)	Realms allow individuals to control and communicate with their personal identity.
10	Moore, A.J (1987)	People are judged by the places in which they live or work.
11	Altman (1981)	The private realm of man is divided into three parts: the main, the secondary and the public.
12	Savinar (1975)	Being territorial increases the likelihood of theft and assault in some cases.

Convergent theories focus more on the psychology of the environment in the area of the territory and try to take advantage of the de-tension of the environment by recognizing the effective sensory and physical components to provide people with peace and comfort. On the other hand, divergent theories focus on the theories related to crowding and density, and express it as an emotional and personal matter, the training and education of which seems to be quite complicated and impossible, and it cannot be measured. given because it depends on the mental and psychological ability of people and its control is almost returned to the person of the audience, which is out of reach of the researcher and it is not possible to implement a written and detailed planning based on this.

Crowding in residential complexes

One of the important topics in residential environments is the effects that social and shared

environments have on the behavior of residents [38]. In many researches that have investigated the relationship between the social dimension of the environment and mental health, factors such as security and protection, privacy and preservation of the territory, neighborhood relations and residents' participation in the management of the residential environment have been pointed out [40,25].

1-Security: The issue of security in residential complexes is one of the human and environmental factors that directly affect the planning and design of these complexes, improving the quality of human life[38]. In urban spaces, the sense of security means that citizens can move freely and communicate with their fellow citizens and engage in social activities, without being threatened or faced with physical, mental and emotional violence and harassment [23].

2- Congestion and overcrowding: Evans, Sigert and Harris confirm this by examining children's mental health. They found that there is a positive relationship between crowding at home and psychological symptoms [12]. It is also said that these conditions have an effect on the mental health of children, causing sleep disorders, increasing tension and aggression, reducing the level of children's interactions, and ultimately causing a drop in their education becomes [36]. For example, in a research conducted on second to fifth grade children living in apartments near the highway, it was shown that children living in noisy apartments had a lot of difficulty distinguishing similar words from each other [41].

3- Privacy and territory: a clear definition of territory and privacy can help increase identity, privacy and security and reduce social confrontations and coordination problems [31]. When a person in his living environment feels that people are too close to him and forcibly enter his privacy, he will be stressed and worried and will not have peace of mind.

4-Privacy and social interaction: in housing design, privacy and social interaction are two mutually exclusive concepts, too much emphasis on privacy can cause isolation and out-of-control interaction can cause the loss of privacy and private life [11]. The use of semi-open spaces such as porches that provide a view to the outside, in addition to preserving the privacy of people, brings more social support and lower mental disorders [9]. is one of the most disturbing issues of privacy in the environment. Residential can refer to the use of common walls between residential units, which easily transmits sounds, and nobles to private spaces.

5-Neighborhood relations: evidence shows that the existence of spaces for collective activities can be effective in improving neighborhood relations. For example, participation in collective gardening can lead to more communication between neighbors [46]. If the economic, social and cultural levels of people are closer to each other, the neighborhood relations and interactions between them become more intense.

2. Background Research

Outside the country

- Halpach (1902) about 110 years ago, criticizing laboratory researches, investigated the impact of environmental conditions on human behavior. In this investigation, he separated the environment into three types: natural environment, social environment and cultural environment.

- After that, Egon Branciuk proposed the theory of lens pattern perception, and although he first used the term environmental psychology in 1943, most of the research in this field was published from the 60s and 70s onwards.

- In the meantime, Kurt Lewin, a German scientist who later proposed the theory of the field, According to Le Pen, the real environment is one of the strongest psychological realities in life space. He considered the inner link between human behavior and physical environment. witnessed . Applying this method in addition to personal interest in doing research that could solve real and objective environmental issues and problems created a theoretical point of view that is still accepted by environmental psychology.

- In 1980, Proshansky was effective in expanding the theories of environmental psychology, especially the social conditions and the existence of issues such as civil rights, environmental destruction, women's movements, created a suitable platform for these theories. While the emergence of environmental psychology was in North America, research on environmental issues quickly increased in other parts of the world.

Inside the country (Iran)

In our country, in the 70s and 80s, environmental psychology was introduced to the academic community with the publication of the first articles and translation of books. Although in this field, in the first years, only a book written in accordance with Iran's cultural issues was published, but at the beginning of the 1990s, numerous articles, which are mainly the result of local and field research, were published in prestigious scientific journals and conferences at home and abroad. It is provided from the country.

- Dr. Alireza Einifar says about the science of environmental psychology: In Iran, the topics related to behavioral sciences and environmental psychology were introduced with the translation of the book "Creation of Architectural Theory", the role of behavioral sciences in environmental design written by John Lang. After the authoring of the mentioned book in recent years, apart from the authoring of many books and articles in this field, the impact of this new view on the direction of practical architecture workshops in educational centers can be clearly seen.

- Heshmati and Charejo in 2018, in an article entitled "Effects of environmental qualities on the perceived security of residents with emphasis on the first and second generation components of CPTIAD" to investigate the perceived security of the environment in worn-out structures. they have payed. The research method in this article was descriptive-analytical and fuzzy logic, with questionnaire tool. The results of this research show the support of activities and natural monitoring of the first generation factors, the threshold of capacity and collective culture based on the factors presented in the second generation of CPTIAD, which plays an important role in improving the sense of security of citizens.

- Azadeh and others in 2019, in an article entitled "Analysis of the relationship between the physical quality of urban environments and the perceived stress of citizens (case example: Isfahan metropolis)" with a descriptive and analytical method using a researcher-made questionnaire and analysis derived from multivariate linear regression , findings such as: the quality of the environment in Moftabad neighborhood has resulted in 67% and 46% in Mardavij neighborhood of changes in perceived stress in citizens. The results showed that people who live in low-quality urban environments, more than other people in They are under stress.

- Rafiian, Askari and Askarizadeh in 2018, in an article entitled "Residential Satisfaction Survey of Nawab Residents", came to the conclusion that the standard of community facilities is the highest, and community security and view are the least important. They had residents.

- Haji Nejad, Rafiian and Zamani in 2019, in another article entitled "Investigations of individual variables effective on citizens' satisfaction with the quality of the living environment", they have discussed the comparison of the old and new texture of Shiraz and in this context, the variable of They have considered education as the most important influencing variable in environmental perception.

- Bahreini and Tabibian in 2015, in an article titled "Urban Environment Quality Evaluation Model", try to design, compile and use environmental quality indicators and introduce a new model for urban environment quality evaluation.

- Pakzad in 1381, in his article entitled "Urban Environment Quality; The pending demand of citizens", believes that the attention of urban designers and planners should change from quantity to environmental qualities. In this regard, he considers identity, unity, motivation and sense of place more important than creating expensive spaces and paying attention to visual aspects.

- Rafiian and Askari in 2016, in an article titled "The concept and method of measuring the quality of the urban environment", they express the key concepts and temporal trends of the quality of the environment, structural features and conceptual elements and methods of measuring the quality of the urban environment.

As can be seen in the presented domestic and foreign studies, most of the studies conducted in the field of environmental psychology have been qualitative, and in some cases, a handful have been quantitative. In this study, crowding in residential complexes has been measured using a combination of quantitative and qualitative data, which is an innovation in itself because most studies in the field of environmental psychology are analyzed and logically inferred qualitatively due to the qualitative nature of the data studied. However, in this study, by using the results of inferential statistics and combining the results, it was shown that sensory components such as density, stress, personal space, tranquility, and crowding, as well as physical components such as building structure, height, gender, age, and neighborhood, play a significant role in the discussion of density and crowding in residential complexes.

3. Materials and Methods

This research uses a descriptive-analytical method based on statistical analysis. The statistical population of this research is randomly selected within the study area, namely Fallahi Street, District 10 of Mashhad Municipality, Khorasan Razavi Province. The 7-roof or 6-story buildings on the Fallahi Street pilot located in the western town of Mashhad, whose main land areas are between 300 and 350 square meters, and often have 4 floors with 2 units and 2 floors with 1 unit, which are 10 units in total. The area of the 2-unit buildings is divided into 2 units of 100 meters or 1 unit of 120 meters and 1 unit of 80 meters, depending on whether the land is north or south. And the single units are about 200 meters. Usually, the age group using the single units is over 50 years old, and the rest of the units are inhabited by younger people.Data collection will be carried out in three stages: The first stage was conducted in the context of library studies and using the literature and resource review method. Then, after identifying the main components, the necessary concepts were extracted and made into a researcher-made checklist that was used in the next stage; its validity will also be measured by experts using the Likert method (5 sections).

In this study, the library method was used to collect information on the theoretical foundations and research literature of the subject, from library resources, articles, books, and the World Wide Web. In the field method, the following tools were used to collect data and information for analysis: Residential Complex Residents Depression and Anxiety Scale: In this study, the 15-question form of the Residential Complex Residents Depression and Anxiety Scale will be used. Its 15-question form was standardized by Malkooti et al. (2006) in Iran. The test results showed desirable reliability coefficients. Cronbach's alpha (0.9), classification (0.89), and test-retest (0.58) were obtained. Also, sensitivity and specificity of 0.9 and 0.84 were obtained for the test. The researchers concluded that the 15-question GDS form has appropriate reliability and validity for conducting screening studies, especially in urban residential areas (Malkoti, 2006, quoted by Pour Ebrahim, 2006).

Beck Stress-Inducing Components Questionnaire: This test consists of 21 questions, which measure the intensity of stress-inducing and stress-inducing components in adolescents and adults. Aaron T. Beck and his colleagues (1988) developed the BAI in the Cognitive Therapy Center in the Psychiatric Unit of the University of Pennsylvania to assess and investigate anxiety symptoms. A score of 1-7 indicates minimal anxiety intensity (normal), a score of 8-15 indicates mild anxiety intensity, a score of 16-25 indicates moderate anxiety intensity, and finally a score of 26-63 indicates severe anxiety. The BAI is a self-report instrument of anxiety intensity that is scored on a 4-point scale from 0 to 3.Crowded Environment Questionnaire: In this study, a revised version of the Crowded Environment Scale was used to measure the impact of environmental factors on humans in crowded and

dense population conditions. The initial version of this scale was developed in 1978 by Russell, Plough, and Ferguson, which were selected from the 75-question scale of Meizen (1969). Russell, Pilau, and Katrona (1980) developed a revised version of the Crowding and Overcrowding Scale. This test consists of twenty items, ten of which are positively worded and ten are negatively worded, and is a four-choice item with Likert-type responses (never, rarely, sometimes, and often). The reliability of this questionnaire was also examined using the Kronach alpha method in a study by Ahadi (2009), with a coefficient of 0.79 [34]. In order to analyze the findings, in the present study, first, primary information and data were collected and common indicators in descriptive statistics, including mean, standard deviation, and distribution, were obtained. Then, in the inferential statistics section, using the statistical methods of analysis of variance and paired t-test, the hypotheses were tested and the questions were answered. The information obtained was analyzed by SPSS software at two descriptive and inferential levels. At the descriptive level: the frequency distribution of the mean and standard deviation were calculated, and at the inferential statistics level, the analysis of covariance method was used.

Table 3: Examining the components of de-congestion, de-tension and de-stress from the point of view of theorists in the field of non-architecture .

	Theorists	Components					
		Personal space	Sensory Overload	People's Personalities	Social Class	Sex	Age
1	Altman	✓	✓	✓	✓	✓	✓
2	McAndrew	✓	✓			✓	✓
3	Stokels et al	✓			✓	✓	
4	Friedman et al	✓	✓		✓	✓	
5	Roger Barker's	✓	✓	✓			✓
6	Taylor.R					✓	✓
7	Kaplan,S	✓				✓	
8	Gifford	✓	✓	✓		✓	
9	Parrott,et al	✓	✓			✓	✓
10	Jones A	✓	✓		✓	✓	

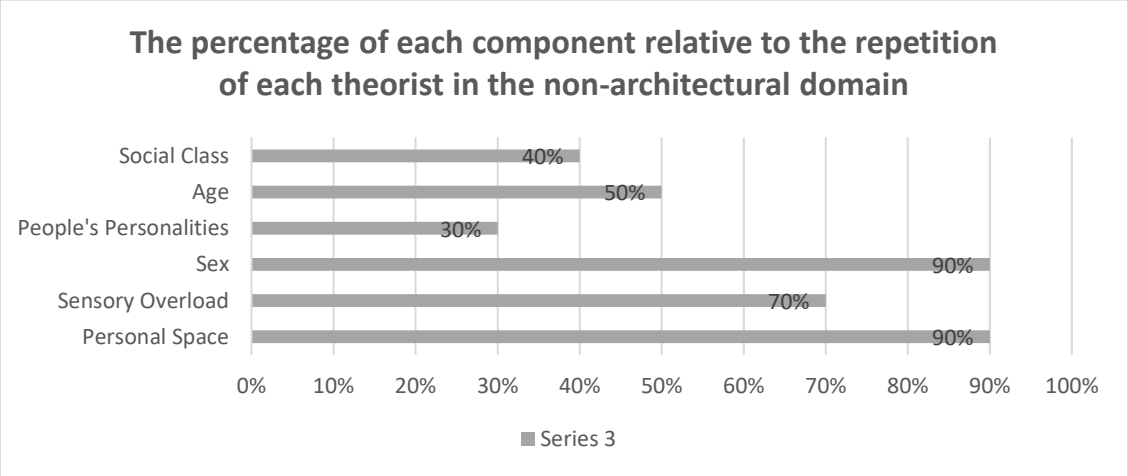


Diagram 1: The percentage of each component in relation to the frequency of each theorist in the non-architectural field; Source, author, 1402 .

Table 4: Examining de-congestion, tension-relieving and stress-relieving components from the point of view of theorists in the field of architecture

	Theorists	Components					
		Height	Physic of Building	Neighborhood	Density (force multiplication)	Communal space or semi-public space in the building	Spatial Usage
1	Edward T. Hall	✓	✓	✓	✓	✓	✓
2	Brian Lawson	✓	✓		✓	✓	
3	Yohanni Palasma	✓	✓		✓	✓	✓
4	Schultz	✓	✓	✓	✓		
5	Goffman		✓		✓		
6	Savinar	✓			✓	✓	
7	McAndrew	✓	✓	✓	✓	✓	✓
8	Tadao Ando	✓	✓		✓		✓
9	Azade Shahcheraghi	✓	✓	✓	✓	✓	✓
10	Jahanshah Pakzad				✓	✓	✓

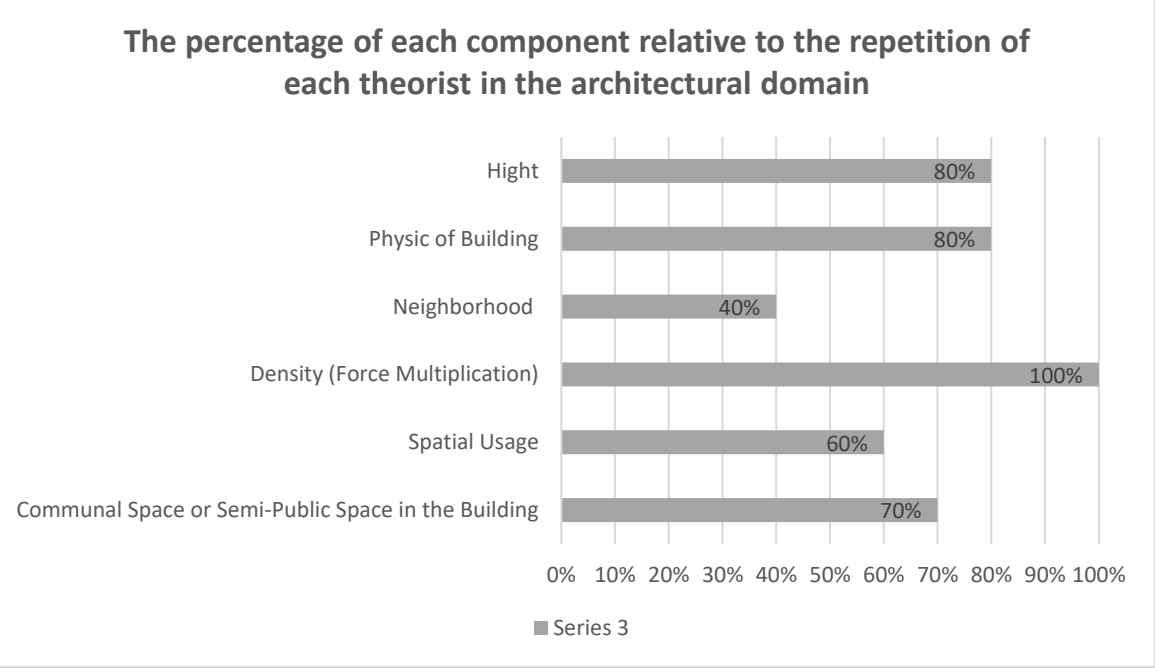


Diagram 2: The percentage of each component in relation to the repetition of each theory in the field of architecture; Source, author, 1402

4. Discussion and results

The findings of the present study, using primary data and statistical analyses conducted on this data, are presented in three sections as follows:

-Study of the subjects' demographic characteristics

-Descriptive study of the research data

-Inferential study of the research dataThe information obtained from survey form number one, which is attached, is presented in the form of the following charts:

Diagram 3. Reasons for living in classes, questioner, writer, 1402

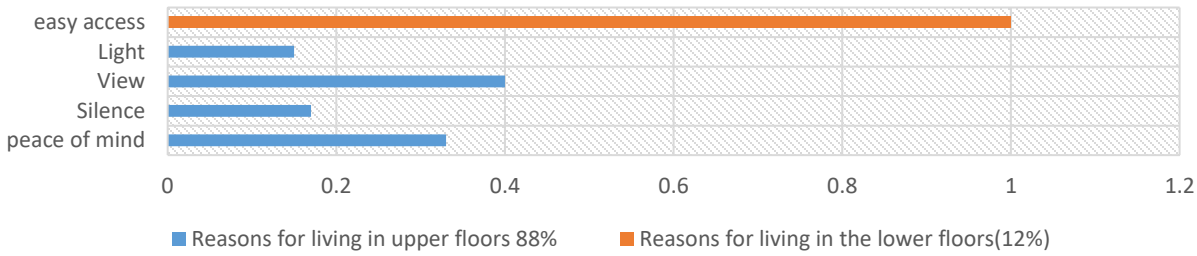


Diagram 4. Choosing the facade of the building, questioner, author, 1402

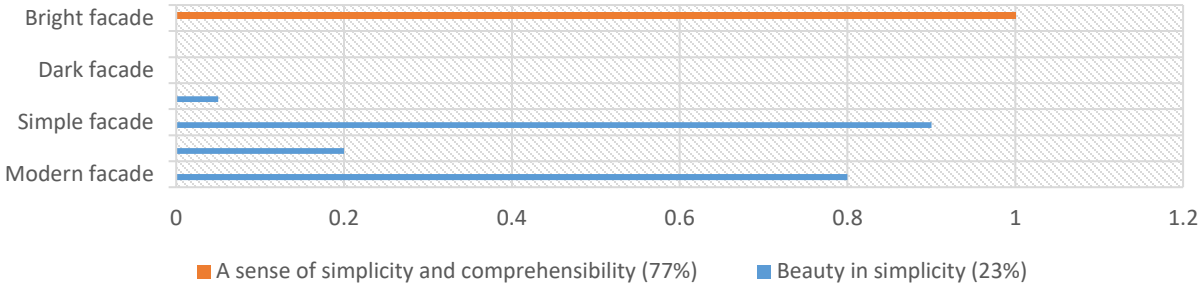


Diagram 5. Type of windows and openings in the building, questioner, writer, 1402

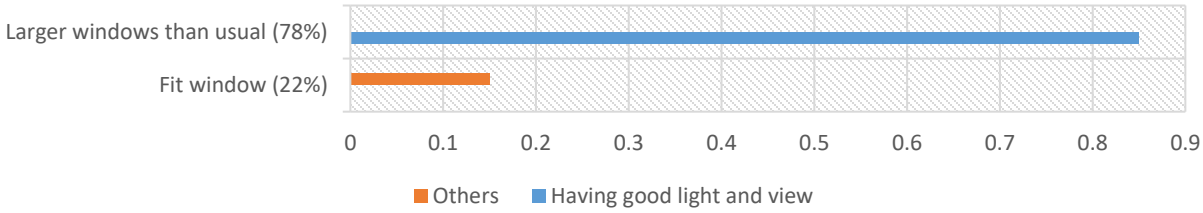


Diagram 6. The cause of life in a single unit, questioner, author, 1402

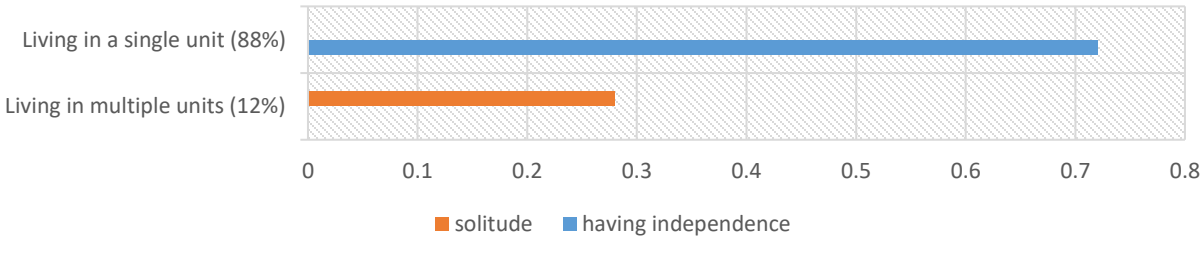


Diagram 7. The reason for living in multiple units, questioner, author, 1402

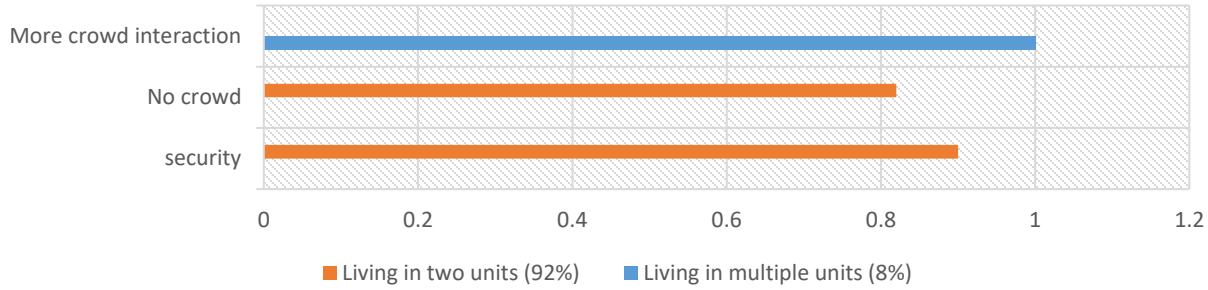


Diagram 8. Young or middle-aged residents of the building, questioner, writer, 1402

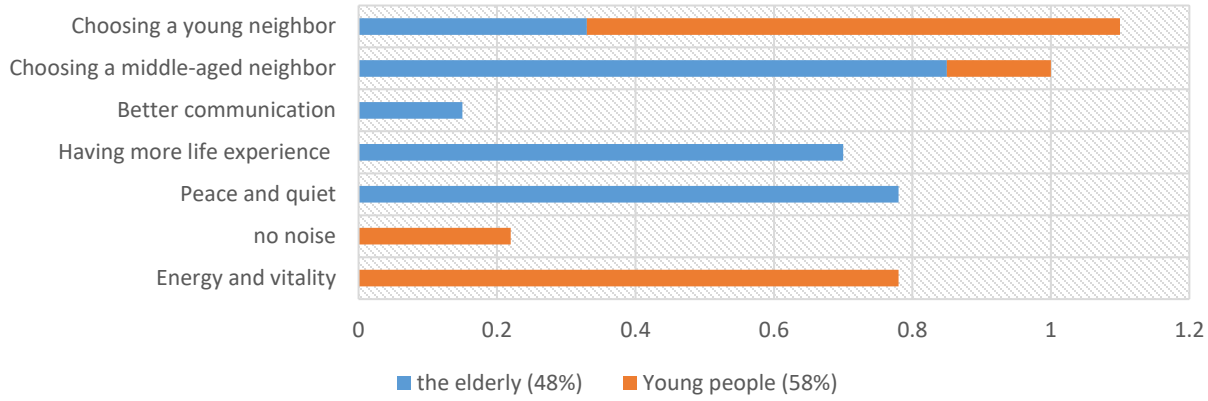


Diagram 9. The cause of dissatisfaction with the neighbors in the building, questioner, writer, 1402

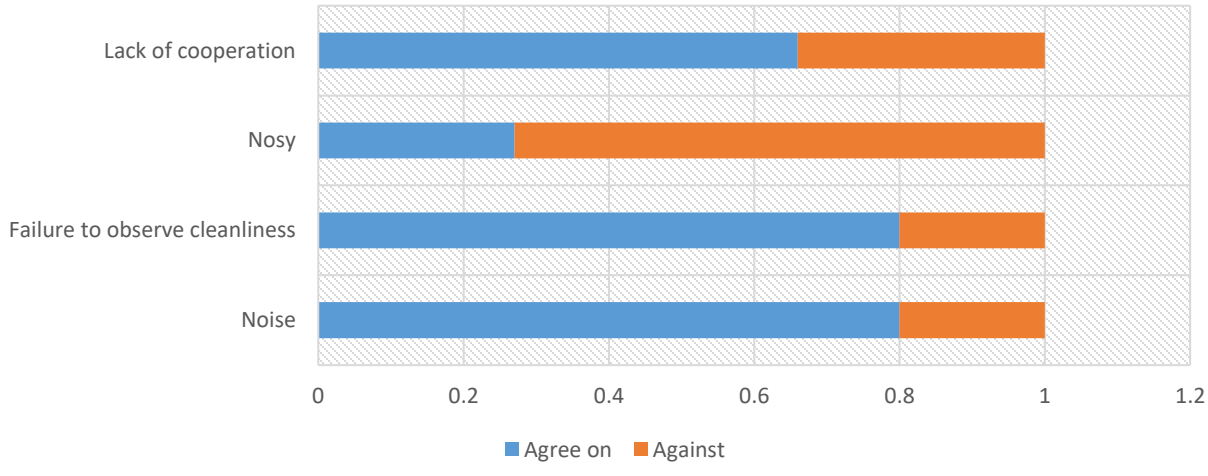
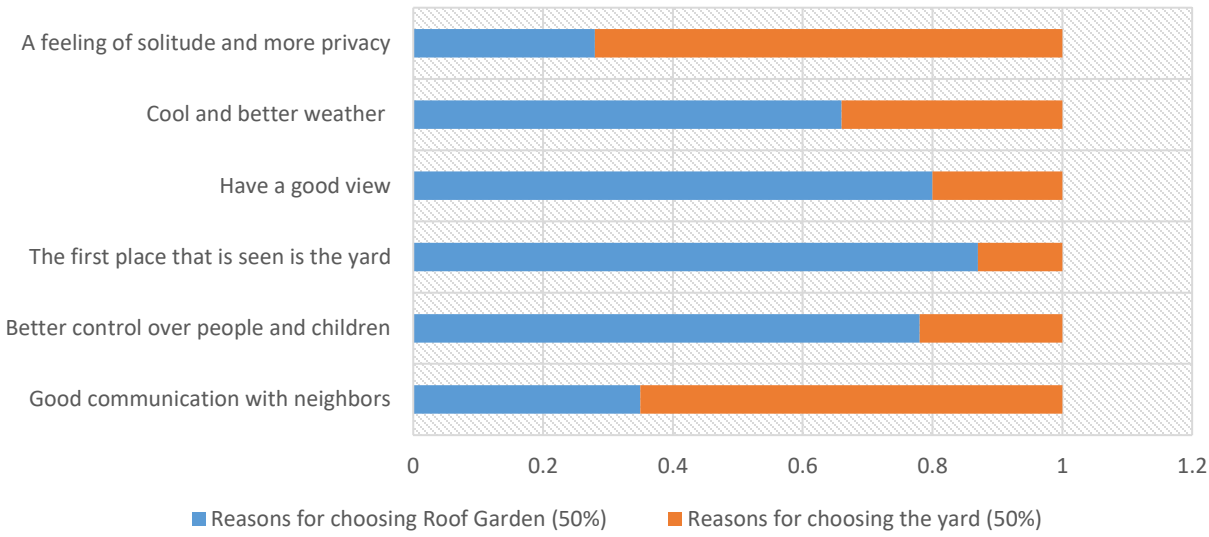


Diagram 10. The reason for having a yard or roof garden in a building, questioner, author, 1402

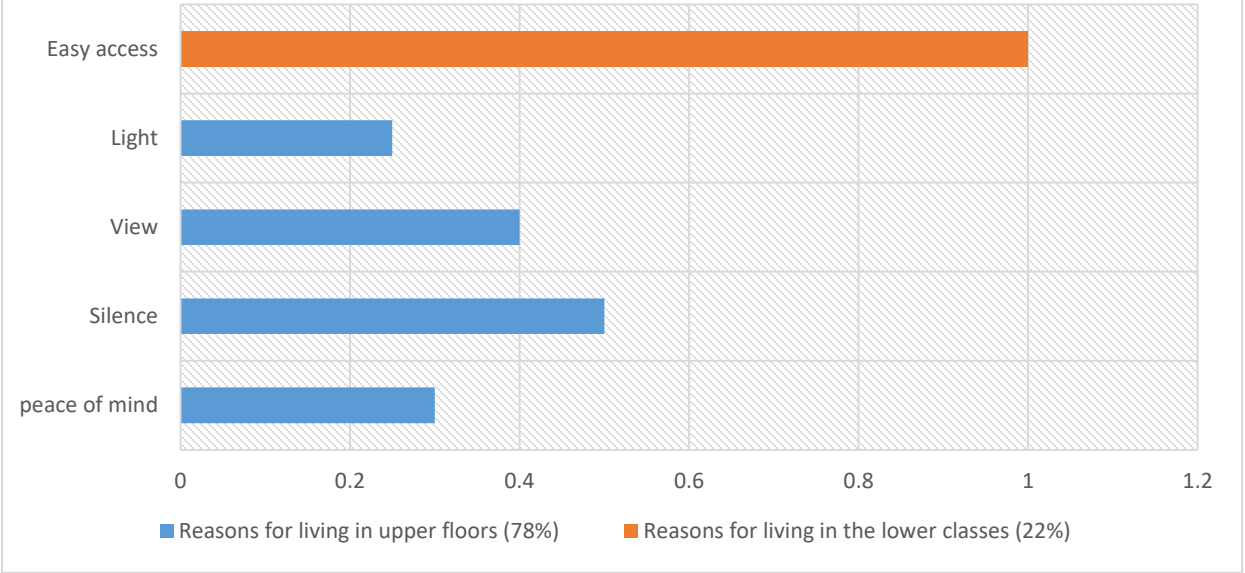


Number of participants: 60 people

The number of people who answered the body-sensory questions: 16 people

The information obtained from survey form number two, which is attached, was extracted from form number one for the second time, according to the supervisor's opinion, but with the difference that this time the architectural explanations were given to the statistical population and the preliminary understanding questions were asked. The statistics have changed a little

Chart 11. The reasons for living in floors consciously and architectural explanations, author, 1402



.

Diagram 12. Selection of the facade of the building in a conscious way and architectural explanations, author, 1402

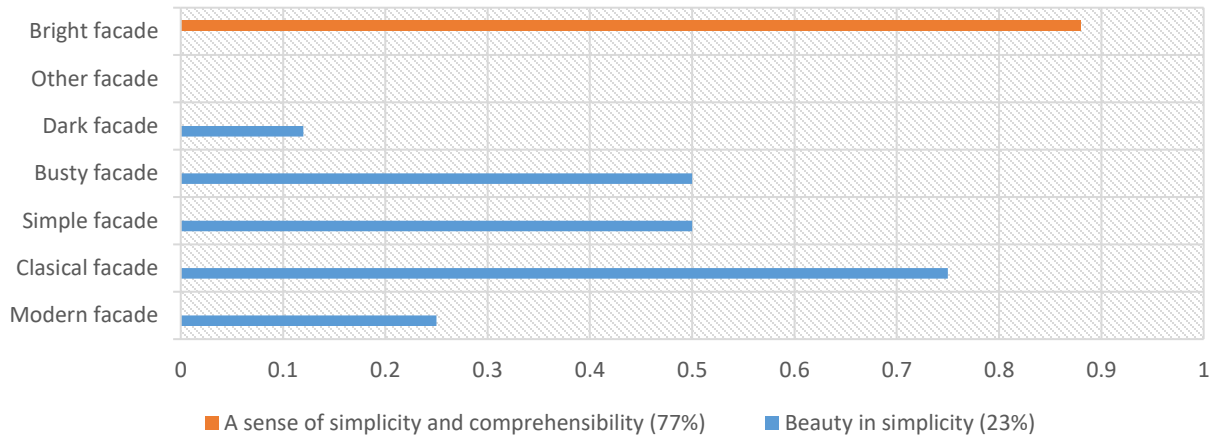


Diagram 13. Types of windows and openings in the building in an informed way and architectural explanations, author, 1402

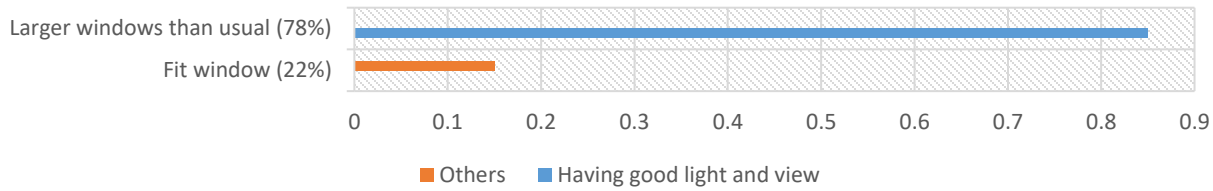


Diagram 14. The reason for living in a single unit consciously and architectural explanations, author, 1402

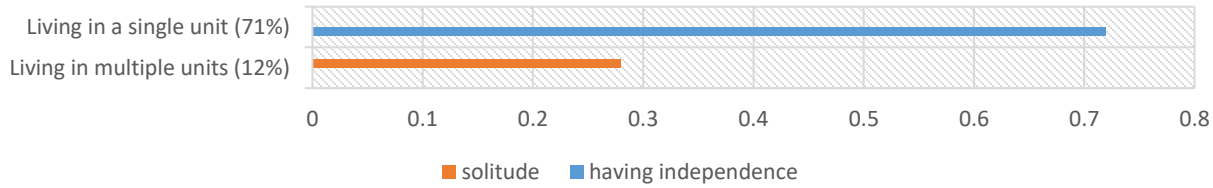


Diagram 15. The reason for living in multiple units consciously and architectural explanations, author, 1402

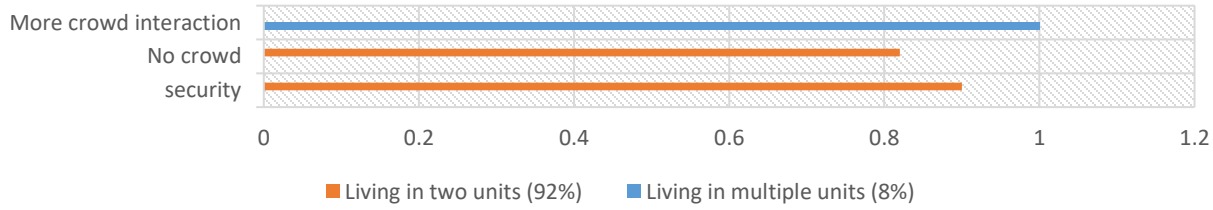


Diagram 16. Young or middle-aged residents of the building in an informed way and architectural explanations, author, 1402

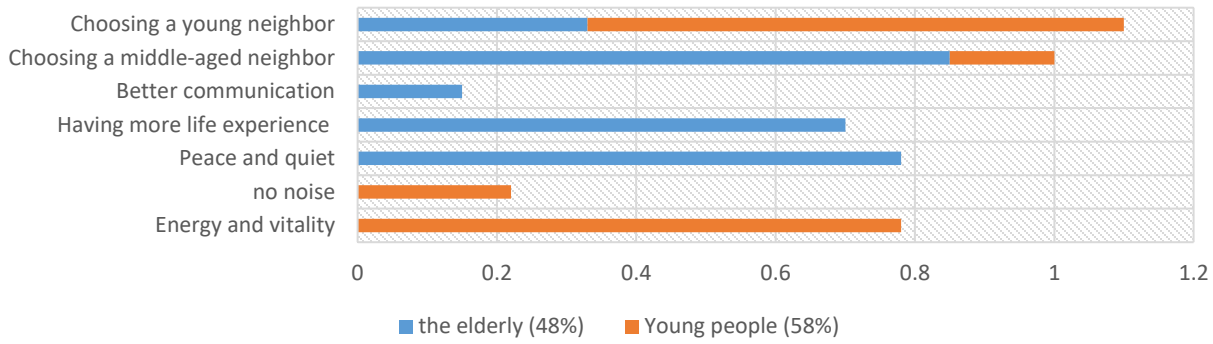


Diagram 17. The cause of dissatisfaction from neighbors in the building in a conscious way and architectural explanations, author, 1402

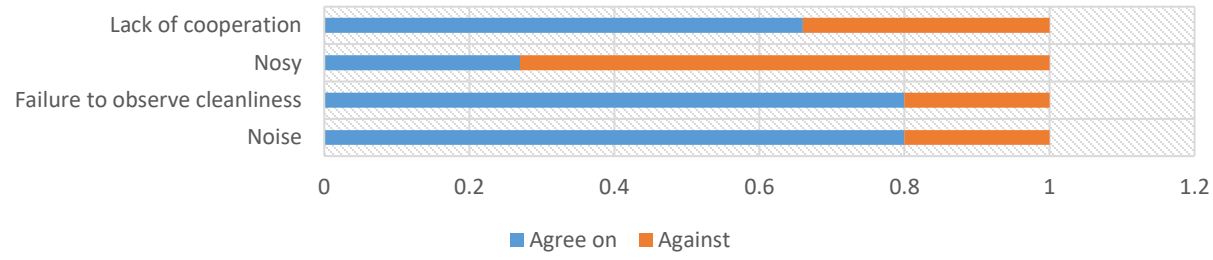
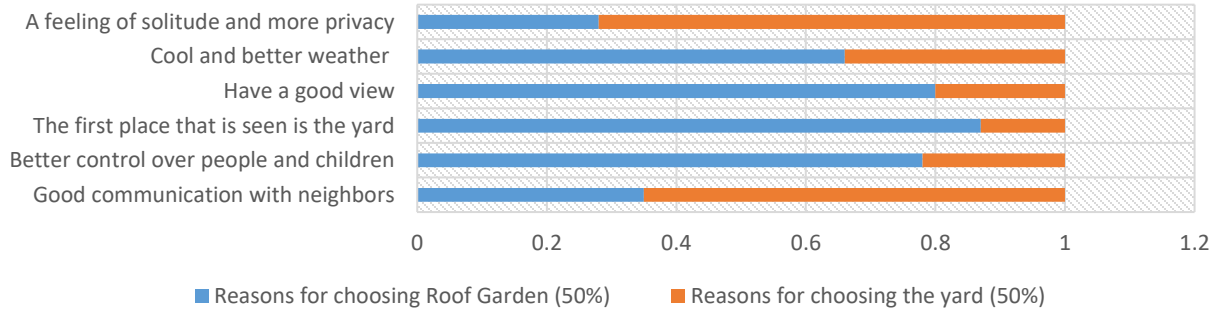


Diagram 18. The reason for having a courtyard or roof garden in the building consciously and architectural explanations, author, 1402



In order to achieve the desired result in this article, by changing the components in a tangible and understandable form for the public, it was moved to structural questionnaires with concrete answers, in the first stage, by integrating the sensory and physical components in the building, we tried to The initial response was from the statistical population in order to obtain the results of the descriptive questionnaires for the next questionnaires. The information obtained from survey form number three, which is the result of the second questionnaire, is presented as follows

Chart 19. Definition of peace from the perspective of residents of residential complexes, author, 1402

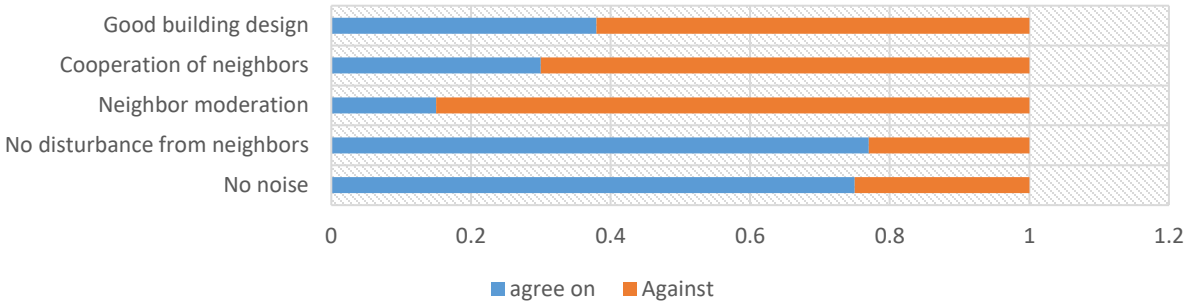


Diagram 20. How does a good view make you feel, author, 1402

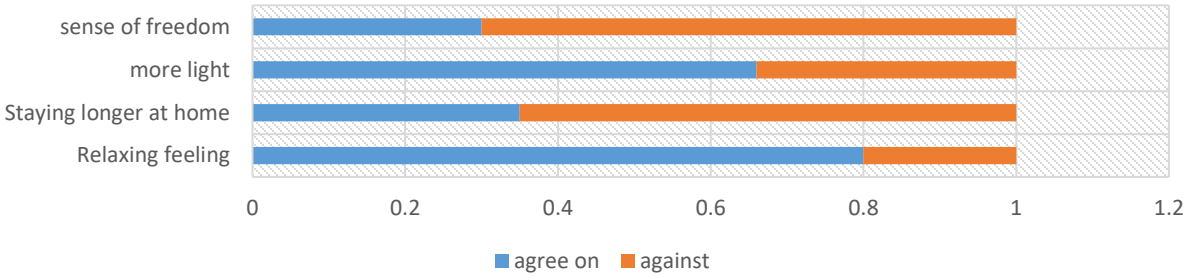


Diagram 21. Components of a good view from your point of view, author, 1402

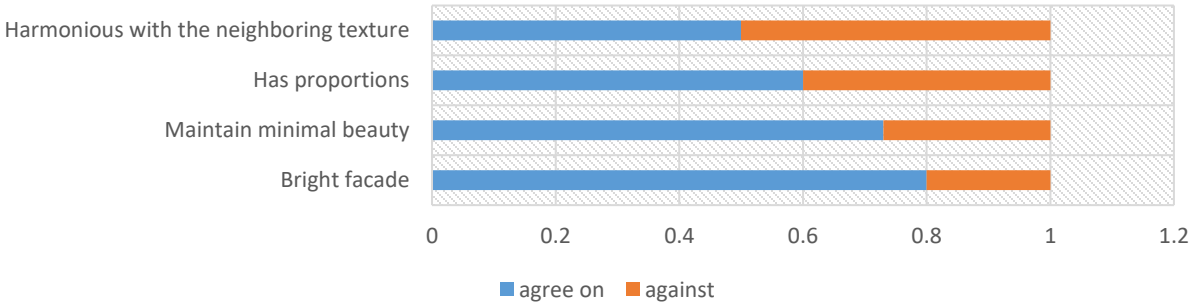


Diagram 22. Items of the building that give you a sense of independence, author, 1402

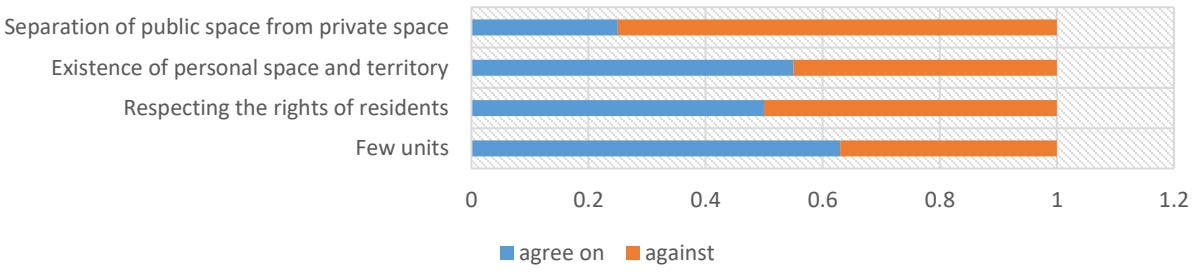


Chart 23. How is sense of security induced, author, 1402

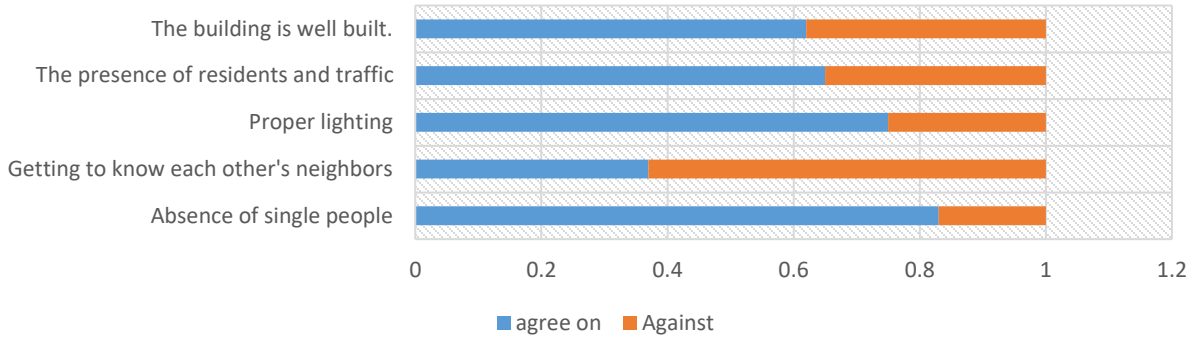


Chart 24. Factors of better communication among residents in the yard, author, 1402

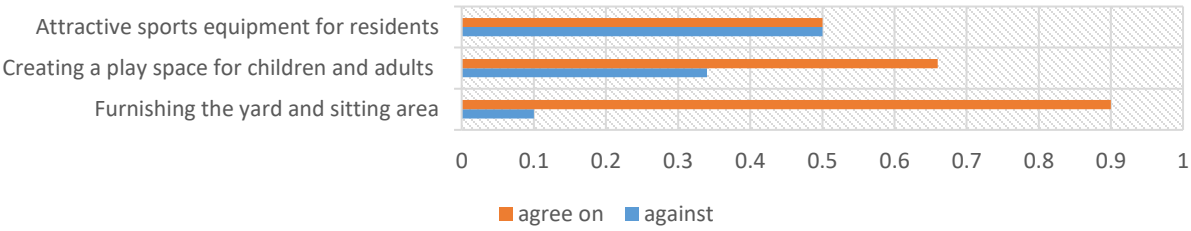
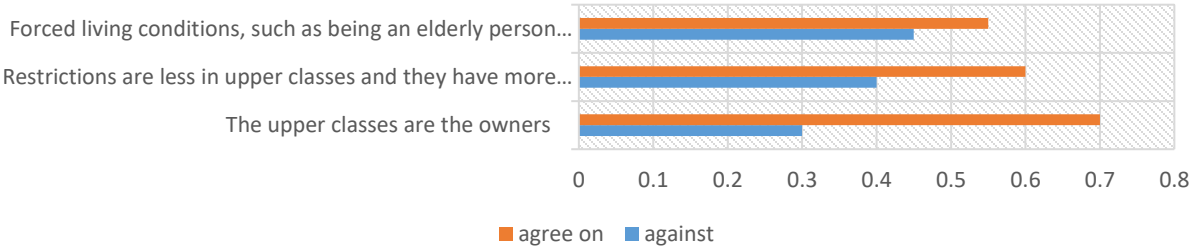


Chart 25. The relationship between upper classes and better financial and cultural status, author, 1402



5. Conclusion

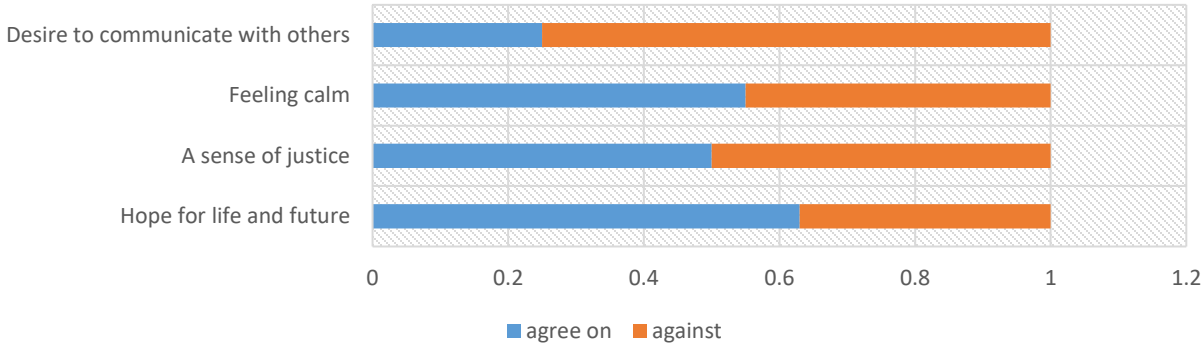
The results of quantitative studies showed that there is a significant difference between the stress-causing and crowding components and residential architecture, that is, the control and experimental group subjects in the total subjects at the 0.05 level. Accordingly, it can be stated that creating flexible design, the presence of removable partitions in the house instead of walling can create multifunctional spaces, and this plays a significant role in reducing stress and depression in residents of multi-unit residential complexes. The importance of this finding is that research has shown that large populations in cities are engaged in apartment living, which has a high rate of depressive symptoms, and given that the presence of several depressive symptoms leads to a significant decrease in the individual's performance, the presence of these symptoms in residents of apartment complexes can have undesirable consequences in their lives. Therefore, the short-term development of open spaces in the residence can, in addition to filling the residents' leisure time, also lead to a

reduction in their depression. Therefore, it seems that if the levels of multi-functional spaces as well as the extent of visual visibility in the residence are increased, their levels of depression and stress will decrease and as a result, their general health will improve.

Also, according to the statistical results, there is a significant difference between density and crowding and residential architecture, that is, the subjects of the control and experimental groups, which is the total number of subjects at the 0.05 level. Accordingly, it can be stated that the stress-generating components in the architectural design of the residential space have increased the anxiety and stress of the experimental group compared to the control group. In other words, the stress-generating components have increased the anxiety of the residents of residential complexes in the post-test phase.On the other hand, there is a significant difference between density and crowding in the control group and the experimental group in all subjects at the 0.05 level. Accordingly, it can be stated that density does not always lead to crowding in the experimental group compared to the control group. In other words, density does not always lead to crowding in residential spaces of communities, and this is in the post-test stage.

Examining the qualitative results of this research, it can be found that in the investigation of buildings and residential complexes, in the discussion of de-stressing, crowding and achieving relaxation, sensory components are more involved than physical components, so that according to the statistics obtained from the surveys of the statistical community. The aim was to find out that sensory components such as density, stress, personal space, peace and crowding are among the components that can play a key role in creating peace, stress and crowding, so paying attention to them in the design of residential complexes can cause congestion in residential complexes. On the other hand, the role of physical components such as the body of the building, height, gender, age and neighborhood is much simpler and less important and in some cases they can be ignored, but if they are paid attention to in the design of the building, they can reduce stress and reduce congestion.

Diagram 26. Components of life expectancy and future, author, 1402



They are not affected. Finally, it can be concluded from this article that living in an apartment is full of cognitive ambivalences, and the components that appear stressful at first glance, can be relaxing elsewhere. In some theories, peace is defined as being away from noise, but in the discussion of security, the same noise and coming and going in common areas such as lobby, parking lot and apartment yard are considered as components of creating security. It is a good sign. Or if a neighbor is not interested in communicating with other neighbors, it is a sign that he wants security, but another person happens to define security in knowing his neighbors. Therefore, a single keyword or component alone cannot be an absolute stressor or an absolute relaxer. Components such as security, peace, sense of independence are formed exactly when we do not think of removing other components, but try to use them in our place and time.

References

[1]. Amabile, Teresa, 1995, *Growing up Creative: Nurturing a Lifetime of Creativity*, (GhasemzadehHassan, Trans.) Ddonyaye Noo Pub.

[2]. Amabile, T. (1995). *Growing up Creative: Nurturing a Lifetime of Creativity* (Ghasemzadeh Hassan, Trans.). Ddonyaye Noo Pub.

[3]. Altman, I. (1981). The environment and social behavior: Privacy, personal space, territory, and crowding. *Brooks/Cole Publishing Company*.

[4]. Altman, I. (1985). *The environment and social behavior*. Springer.

[5]. Ashcroft, R. E., & Scheflen, A. E. (1976). *People space: The behavioral basis of design*. Prentice-Hall.

[6]. Bam, A., & Kuman, K. (1967). The effect of social density on psychological well-being. *Journal of Social Psychology*, 10(3), 245-260.

[7]. Bam, A., & Valnis, M. (1979). Spatial density and stress response. *Environmental Psychology*, 5(1), 89-102.

[8]. Bell, A., Fisher, J., Baum, A., & Greene, T. (1973). Environmental psychology. *Holt, Rinehart and Winston*.

[9]. Brown, B. B., Perkins, D. D., & Brown, G. (2009). Incivilities, place attachment and crime: Block and individual effects. *Journal of Environmental Psychology*, 29(3), 243-257.

[10]. Cohen, S. (1978). Environmental stress. *Annual Review of Psychology*, 29, 1-21.

[11]. Einifar, A. (1379). Human environmental factors effective in the design of residential complexes. *Fine Arts Quarterly*, 8, 109-118.

[12]. Evans, G. W. (2001). Residential density and psychological health among children in low-income families. *Environment and Behavior*, 32(2), 165-180.

[13]. Evans, G. W. (2003). The built environment and mental health. *Journal of Urban Health*, 80(4), 536-555.

[14]. Evans, G. W., & Paulson, A. C. (1989). The role of the social environment in stress-related illness. *Journal of Social Issues*, 45(3), 45-61.

[15]. Friedman, R. (1975). The density-intensity hypothesis. *Journal of Personality and Social Psychology*, 35(2), 175-182.

[16]. Friedman, R. (1980). The effect of spatial constraints on human behavior. *Journal of Environmental Psychology*, 5(1), 55-70.

[17]. Gifford, R. (1999). *Environmental psychology: Principles and practice*. Allyn & Bacon.

[18]. Grutter, J. (2014). The impact of environmental stressors on human behavior in confined spaces. *International Journal of Environmental Psychology*, 12(4), 287-301.

[19]. Heshmati, R., & Charejo, N. (2018). Effects of environmental qualities on the perceived security of residents. *Urban Studies Journal*, 15(2), 120-138.

[20]. Hoseini, A. (1999). *Creativity essence and how to train it*. Astan Qods Razavi Pub.

[21]. Ittelson, W. H. (1989). Environmental perception and control. *Journal of Environmental Psychology*, 9(2), 145-162.

[22]. Jain, R. (1987). Gender differences in response to high density environments. *Journal of Social Psychology*, 12(1), 34-50.

[23]. Jamali, F., & Shaygan, S. (2011). Security and urban spaces: Analyzing urban safety measures. *Iranian Journal of Urban Planning*, 10(3), 55-70.

[24]. Kaplan, S. (1987). Effects of high density on human well-being. *Journal of Environmental Research*, 7(1), 65-79.

[25]. Kawachi, I., & Berkman, L. F. (2003). Neighborhoods and health. *Oxford University Press*.

[26]. Kent, S. (1991). The role of attachment in territorial behavior. *Journal of Environmental Psychology*, 11(3), 219-232.

[27]. Lang, J. (2017). The helplessness theory of urban stress. *Journal of Urban Studies*, 25(2), 95-112.

[28]. Lorenz, K. (1966). The role of territorial behavior in social interactions. *Animal Behavior Journal*, 14(2), 145-160.

[29]. Luo, Y., Zhang, X., & Li, W. (2006). High density and stress response: A psychological study. *Journal of Psychological Research*, 18(3), 102-119.

[30]. Mahmoodi, A. S. (2008). *Design thinking*. Beautiful Arts Publications, No. 20, Tehran.

[31]. McAndrew, F. T. (2008). *Environmental psychology* (Mahmoodi, Gholamreza, Trans.). Zarbaftasl Pub, Tehran.

[32]. McAndrew, F. T. (2015). Territorial behavior and personal space. *Journal of Environmental Psychology*, 32(1), 112-130.

[33]. Milgram, S. (1970). The experience of living in cities. *Science*, 167(1), 1461-1468.

[34]. Mirhosseini, R. (2010). The impact of urban density on stress. *Iranian Journal of Environmental Psychology*, 7(2), 88-103.

[35]. Moore, A. J. (1987). Social judgments and the built environment. *Urban Studies Review*, 9(3), 34-50.

[36]. Page, A. (2002). Poor housing and mental health in the United Kingdom: Changing the focus for intervention. *Journal of Environmental Health Research*, 1(1), 31-40.

[37]. Parrott, W. G., Smith, R. H., & Schwartz, A. (1989). Social demands and stress responses. *Journal of Social and Clinical Psychology*, 7(2), 98-113.

[38]. Purdihimi, S. (2011). *City housing and collections*. Tehran: Armanshahr.

[39]. Rafiian, M., Askari, A., & Askarizadeh, M. (2018). Residential satisfaction survey of Nawab residents. *Iranian Journal of Urban Planning*, 12(4), 215-230.

[40]. Riger, S., & Lavraks, P. (1981). Community ties: Patterns of attachment and social interaction in urban neighborhoods. *American Journal of Community Psychology*, 9(1), 55-66.

[41]. Sarafino, E. (2007). *Health psychology* (E. Mirzaei, Trans.). Tehran: Rushd. (Original work published 1998).

[42]. Savinar, R. (1975). Territorial behavior and crime: The relationship between personal space and aggression. *Criminal Justice Review*, 5(2), 201-214.

[43]. Stokels, D., Andrews, F. M., & Wendt, M. (2002). Psychological effects of overcrowding. *Journal of Applied Psychology*, 87(1), 53-65.

[44]. Swarming Theories. (2014). *Journal of Environmental Psychology*, 15(2), 95-110.

[45]. Taylor, R. (2002). The architectural aspects of controlling crowding in built environments. *Journal of Architectural Psychology*, 10(3), 76-89.

[46]. Teig, E., Amulya, J., Bardwell, L., Buchenau, M., Marshall, J. A., & Litt, J. S. (2009). Collective efficacy in Denver, Colorado: Strengthening neighborhoods and health through community gardens. *Health & Place*, 15(4), 1115-1122.

[47]. Worchel, S. (1979). The role of arousal in urban stress. *Journal of Social Issues*, 35(2), 63-78.

Appendix 1

In the first questionnaire with questions such as:

1- Do you like living at a high altitude (upper floors) or a height (lower floors)? Why, what is the reason? 2- Do you feel relaxed in higher floors or lower floors?

3- In your opinion, what features does a good facade have in a building? (For example, modern, classic, simple, busy and full of details, bright, dark, etc.) Be sure to write your personal opinion.

4- Do you prefer the windows to be the same size or larger than usual? Whichever one you choose, what is the reason?

5- You prefer in your floor; Is it a single unit and you live in a single unit or multiple units? What is the reason?

6- If you choose or are forced to live in a multi-unit apartment, what is the best number of units in each apartment? Write your reason for choosing the right number of units?

7- Do you prefer your neighbor to be: young, middle-aged or old? State the reason

8- What actions from your neighbor cause you discomfort and tension?

9- Do you prefer your neighbor's house in the same unit as yours to have more or less or the same size as yours? Write the reason for your choice?

10- Do you prefer your apartment to have a proper yard or a roof garden? What is the reason ?

11- In your opinion, what are the characteristics of a suitable yard or a suitable roof garden?

12- Do you want to see your neighbor during the day? In your opinion, where are the best places for this short meeting in our building?

13- In your opinion, how many meters should be the suitable space for the corridor (the space in front of the units and the elevator)?

14- If you think of something that helps the peace of the residents in a building, please write it down?

Appendix 2

An attempt was made to examine the mental space of the statistical community and determine the boundaries of the work, from the results of this questionnaire, new questions were selected, and considering the thinking line of the statistical community, the questions with basic explanations and a better understanding of the material for They were arranged. The keywords and components of the questionnaire were changed and designed in such a way that they have a structural relationship with their answers.

The questions of the second questionnaire are as follows:

1- What is your definition of peace in the building?

2- How does the presence of a view (good view) on the upper floors make you feel, or in other words, what are the benefits for you?

3- What are the characteristics of a "good facade" in a building?

4- What things in the building make you feel independent?

5- What things in the building cause security?

6- What solution do you suggest for more cooperation of neighbors in the building?

7- What do you suggest for more communication between the neighbors in the courtyard of the building? (that is, what factors in the yard, if any, cause more communication and friendship between neighbors)

8- In your opinion, what are the characteristics of people who live in higher classes? (For example, do you think they have a better financial situation? Or do they have a better culture? Do you have a specific objective experience in this matter? Or do you think there is no difference at all?