**Causal Modeling of the Design Components of Residential Complexes in Response to the Need for Self-Actualization[[1]](#footnote-1)\***

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***Abstract***

*the current century, the loss of individual identity and the depletion of meaning make it necessary to pay attention to self-actualization more than in the past. In order for people to achieve self-actualization, it can be an architectural solution to respond to these problems. Based on the stated necessity, the present research was written with the aim of presenting a design model of residential complexes based on the self -actualization of the residents. The research method of the current research is a combination; In the first stage, the document mining and the Delphi method were implemented; Then, the questionnaire of the users was designed. After completing the questionnaire, the information was analyzed using R factor analysis. In this order, the components affecting the design of residential complexes based on the self -actualization are introduced. Finally, after presenting the theoretical model of the research components, the fit and acceptability of the model has been checked and confirmed by Amos software. The community studied in the Delphi method were experts in the fields of architecture and urban planning, and sampling was done through snowball method. In the second phase, the statistical population of adults living in residential complexes is also included, and sampling in this phase has been done by random cluster method. The results of the research show that the factors affecting the design of residential complexes based self-actualization include "Creative Environment", "Eventability", "Diversity", "Participatability", "Social Interactions", "Environmental Safty" and "Discoverability".*

**Keywords:** Residential Complexes, Housing, Human Needs, Desirable Housing, Self-Actualization.

**1. Statement of the Problem**

Self-actualization is the main motivation of human and the fundamental concept of humanistic psychology, which humanists consider to be the fundamental principle of perfection and mental health (Frankl, 2021). Self-actualization or self-realization means the full realization of one's capabilities and is synonymous with the terms self-realization, self-reflection, or self -exploration (D'Souza, 2018). Experts put special emphasis on the relationship between creativity, mental health and self-actualization and believe that these concepts are semantically linked to each other so that they can be considered as a single concept (Jalili and Nowruz, 2017). In this context, Rogers (1969) and Maslow (2008) both believe that a creative person and a self-actualized person are approximately There are people (Ryder, 1987). People who have achieved levels of self-actualization feel good about themselves, their lives, and the world around them. They are generally optimistic and have a positive attitude toward others. (Ruf, 1998; Maslow, 1954).

Housing, as the most important space for human presence and development, has the most uses for humans and is the most influential space that exists around a person. (Mazaheri et al., 2017). This space is one of the strongest physical, psychological, emotional and spiritual concepts in human life and reflects the sense of aesthetics, nature, culture and identity of people (Marshall, 2008) and is the first place where a person feels a sense of belonging. He experiences the space in it (Haeri, 2015: 48).

Despite the fact that one of the important features of housing is to cover the basic human needs, today, due to the lack of attention to the needs of the users, it has progressed towards anonymity and reducing the sense of belonging of the residents (Azemati et al., 2016). Failure to pay attention to the need for self -fulfillment in people leads to trauma that appears as a set of frustration and meaninglessness. (Schultz and Schultz, 1400) Failure to pay attention to the needs in the design of the spaces will cause a lack of sense of belonging to the space and the lack of flexibility of the spaces (Alaghemand et al., 2018). Among the basic human needs, meeting the need for self-actualization in the living environment is the most desired by people (Zhang et al., 2019); Because human, due to his innate need to express himself through the flourishing of his abilities, expects the space of the house to be able to provide a suitable platform for his self-actualization (Karimi et al., 2017), on this basis, a house that can make a person as much as possible Helping to achieve the ultimate goal of creation, i.e. perfection and prosperity, can be considered a favorable house, and without a doubt, the more successful it is during this path, the more desirable it is (Zabihi, 2018). Therefore, the response of the residential space to the self-actualization needs of the residents provides the desirability of housing.

The importance of paying attention to personal growth and striving for self-actualization, with Attention to the crisis of meaning in the contemporary world is becoming more apparent. According to the need for self-actualization One of the highest levels of human needs is to pay attention to this need in the residential environment It will cause the growth of personality and lay the foundation for the person's excellence and will have significant effects on the quality of the person's life and interpersonal relationships. The interaction that takes place between the person and the space and the extent of the effects of the residential environment on people, it is necessary to design the housing in such a way that it meets the needs of the users and It causes effective interaction between residents and housing and increases the desirability of the residential space. Housing design, considering the need for self-actualization, can be the basis for the growth and flourishing of people's inner capabilities, which ultimately leads to mental health, well-being, and improvement of people's quality of life. In contrast to not paying attention to the need Self-actualization, cause Damage and disturbance in personal growth and development, specifically in an important space such as housing, will cause the absence of a meaningful relationship between the person and the space. The lack of suitable spatial capabilities in the housing to achieve the self-actualization of people takes away the opportunity for personal growth and prosperity that can be obtained from the environment and leads to the lack of desirability of the residential space and the lack of effective interaction between the person and the space. Considering the number of researches conducted on the ability of housing to meet physiological needs, security, belonging and satisfaction; It seems that in the design of residential spaces, less attention has been paid to the need for self-actualization and the growth and excellence of the individual, which is achieved after achieving it ; This lack of attention is the basic issue in this research, which is the disruptive factor Achieve self-actualization and Individual development and disorder in Mental health and well-being of people It leads to a decrease in the desirability of housing for residents. Current research was written with the aim of presenting a design model of residential complexes based on the self-actualization of residents. In this research, an attempt is made to identify the dimensions and spatial components and principles of residential complex design that can be effective in responding to the self-actualization needs of these people, and to present an elegant and acceptable model for the design of residential complexes based on the self-actualization of residents. It is hoped that by identifying and using the capabilities of environmental architecture, a step will be taken towards the growth and self-actualization of people, so that it will be an introduction to the growth and prosperity and improvement of the mental health of the society...

According to the statement of the research problem, two questions are raised which are:

First Question: What are the architectural components of residential complexes based on residents ' Self-Actualization?

Second Question: What model among the design components of residential complexes based on the self-actualization of residents is graceful and established?

**2. Research Literature Review**

Researches carried out until today by researchers in the field of architecture and urban planning have examined the concept of self-actualization in the hierarchy of human needs and the environment responsive to human needs, as well as the issue of self-actualization independently in the fields of housing and educational environments, and urban areas have been discussed, but due to the fact that no specific and desirable model has been presented in the field of factors affecting the self-actualization of the residents of residential complexes, this research is aimed at self-actualization in the field of housing and specifically complexes. discuss residential and present the design components of residential complexes based on the self-actualization of residents And, finally the model Ali presents the design components of residential complexes based on achieving the self-actualization of the residents. The mentioned researches are presented in Table 1 with an emphasis on the purpose and the results obtained:

**Table 1. Review of the background of the research with emphasis on the goal and results (authors)**

|  |
| --- |
| Weaver, 2010. Discovering self-actualization through the Experience of Architecture. |
| The findings of this research showed that self-actualization is related to architecture and architecture has the power and opportunity to grow towards self-actualization and provide it. | Achieving self-actualization through the process of discovery, through architectural experiences | Architecture and self-actualization |
| Molaeei, 2011. Designing 30 Tir Street in Tehran in order to Achieving Self-Actualization |
| In this research, the method is qualitative and of the case study type, and the results of the research have been achieved through the study of existential dimensions, the process of perception and basic human needs, and the physical, functional and semantic characteristics of the aforementioned axis. | Quality improvement of C-Tir-Mirza Kochak Khan axis through human-centered design | Urban design and self-actualization |
| Kovtun, 2014. Fulfilment of Individual Needs in Architecture, Housing Environment, Institute of Architecture |
| Architectural characteristics must meet the needs of the individual at the levels of biological, social, self- actualization needs, and are the environmental needs of the individual and the emotional reactions that make the architectural environment an influential complex. | The needs and the necessity to pay attention to it in architecture | Architecture and self-actualization |
| Kim & Kim, J M. 2017. The Relation between Housing Needs and Housing Function according to the Maslow's Theory of Needs |
| The results of the study indicate that attention to the needs of self-esteem and self- actualization in housing is in the form of comfort, independence, economic, sociability, relaxation and expression, and a person should go in a direction that expresses entertainment activities in order to develop individual talents in a separate space. | Investigating the related performance of residential space and human needs | Housing and self-actualization |
|  Karimi et., al. (2018). The Relationship between the Dweller and the Dwelling Revisited |
| This study considers the attention to housing readability and the inferential meaning of residents to be a pioneer in the relationship between residents and housing. Housing that interacts with the resident is introduced in three categories: readable and familiar housing, questionable and imaginary housing, and transcendental housing. | Trying to find a home that motivates people to search | The meaning of housing |
|  Zhang et., al. 2019, Research on Smart City Evaluation Based on Hierarchy of Needs |
| The results of the overall assessment with respect to the five levels of the need hierarchy show that among the five levels of the needs of the intelligent function, the highest demand of people is related to meeting the need for self- actualization and then social needs and the lowest demand is related to physiological needs. | Evaluation of smart cities based on residents' needs | City and response to needs |
| Alaghmand et., al. 2019, Designing Components of University's Communal Spaces in Order to Response to Self-Actualization Need |
| The results of this study showed that the most important traits that must be present in the collective spaces of the university to lead to the self- actualization of students are privacy and Privacy, presence, simplicity in environmental organization and sociability. | Extracting the design components of the university's collective spaces | Educational space and self-actualization |

**3. Housing**

Housing is the name of a place It means a place of peace and residence and in the term. It is called a place where people live (Ghorbani and Yazdanpour, 2012: 2). At Dictionary of Dehkhoda Housing in the formal sense: house, house, house \_ residence And, position calm and At Meaning content self With Concepts Because Comfort, peace And, security and local That this needs particle for direct object Realizes, companion (Dehkhoda, 1385). Home is the only place where the first direct experiences with space take place in isolation and togetherness. (Haeri, 2015). Marcus (2019) considers the house as a symbol of himself. In this regard, he writes: " The house may be seen in two ways, the first is an obvious manifestation of oneself, in which mental messages flow from oneself to its objective symbol, and the second is the discovery and intuition of one's nature, which in this state Messages return from the objective symbol to their side" (Markus, 1399: 59). In Table 2, the definitions provided by Experts are given about this word:

**Table 2. Definitions provided by the experts of the House (authors)**

|  |  |
| --- | --- |
| Theorist | Definition provided |
| Rapopor 1969 | The house is an institution that has been created for complex purposes. The positive aspect of the concept of home is the formation of a desirable environment for the life of the family as a social unit. |
| Le Corbusier 1965 | The house is a cover that, in accordance with some conditions, establishes the correct relationship between the external environment and human biological phenomena. |
| Bachelard 1401 | The house is a place of foresight and dreaming, and it allows it to be calmly immersed in fantasy. |
| Miller 2007 | Motivational factors determine the choice of residents for housing design, and the self-esteem and self- actualization of the household also motivates them to shape the living environment according to their expectations. |
| Marcus 2019 | The house is a symbol of oneself and a reflection of the human gaze oneself. |

**4. Residential complex**

Residential complexes are formed from the combination of residential units that are established in the form of apartment blocks and have common areas and open space, common heating and ventilation system and private space inside the residential unit (Rashno and Saeedi Rezvani, 2019). In these complexes, apartment blocks are placed in a predetermined piece of land. Blocks can be combined with each other in different organization and the open space is placed in a meaningful relationship with each block. Other characteristics of residential complexes include: He pointed to their specific and separated boundaries and privacy in relation to the urban environment, which in some cases can define them as a physical-social island in the city (Einifar as cited in Azizi and MalekMohammadnejad, 2016). Designing The sum of It should not be residential only to meaning pick a number Block Structural One Figure in next to the Each other defined, rather At Locating Blocks should be created confinement Spatial, provide to bring space open With Quality And, Creation Composition aesthetic Among mass Structural And space urban, should be taken into consideration (Azizi and MalekMohammadnejad, 2016). The blocks of a residential complex may be Single one to two story villas, multi-story apartment blocks or high-rise blocks should be in the shape of a tower (Ramyar as cited in Jalalian et al., 2022)

**5. Self-Actualization**

The word self-actualization is defined in the words approved by the Persian Language and Literature Academy as realizing the maximum potential abilities of a person by himself (Persian Language and Literature Academy, 2018). The term self-actualization was first proposed by the neuroscientist Kurt Goldstein in 1939 as a tendency to actualize all aspects and individual capabilities (Goldstein, 1993). This word is derived from the Latin word Flor, which means flower, which itself is derived from the Indo-European word Bhlo, which means to bloom. (Gokcen et al., 2012: 4). The concept of self -actualization actually refers to the fundamental proverb of Socrates, that is: " Know thyself ", which is a primary principle of Western thought (Marias, 1967). The first manifestation of flourishing is evident in Aristotle's philosophical thinking; Aristotle's concept of "perfection" refers to the complete realization of potential. The term self -actualization is a modern interpretation of an ancient concept that has been openly expressed since the time of Aristotle in the fourth century BC and in his causal system. is accordingly, This is the old saying that every human being has unique potentials that want to be realized. Jean -Paul Sartre also considers self-actualization to be one of the ways to find meaning (Yalom, 2019: 394-606). Trying to develop potential talents is our most important function as a human being (Weaver, 2010)

**5-1. Self-Actualization in Residential Space**

Human naturally seeks perfection and therefore needs to express himself by flourishing his abilities. He expects the house to provide a suitable platform for this (Karimi et al., 2017). In order to manifest his personality at home, a person creates the environment around him and meditates on it, and then the house has an effect on him. In this way, the person is reflected in his home. and the house becomes his symbol, which is a step for his self -actualization (Markus, 2019). The needs of people living at home are met by housing at different levels; According to this criterion, the most ideal home is a "motivational home," one that helps residents achieve self-actualization and reach their maximum potential. Because the environment, the residents of the house and their needs and desires change rapidly over time. To respond to changes, the house needs a flexible spatial configuration that can cover changes such as seasonal climate changes (physical flexibility) and changes in family size and family structure (social flexibility) and changes in demands (cultural flexibility) (Estaji, 2014). Motivational factors determine the choice of residents for housing design, and the self-esteem and self- actualization of the household also motivates them to shape the living environment according to their expectations (Miller, 2007).

A house that can help people as much as possible in achieving the ultimate goal of creation, i.e. perfection and prosperity, can be considered a desirable house; It is bad that the more suitable it is in this direction, the more desirable it is (Zabihi, 1999). " Ideal House " is a building that covers all human needs. Based on the amount and type of needs met by a building, the house can be evaluated (Estaji, 2014). If a person chooses to live in a place where he can access the resources that meet his needs and satisfy his needs. Achieves self-actualization (Khatibi et al., 2017). In order to realize self- actualization in the housing space, in the first place, it is necessary for the house to have the possibility of realizing the way of living that a person imagines for himself, and in the second place, the house must also be a symbol of the transcendent self of human. In this case, the house has a quality that elevates the human condition and leads to his self- actualization. (Karimi et al., 2017). An ideal house is a place that provides the unity of its constituent elements and reveals the deep meaning of residence. Based on this, it can be acknowledged that an ideal house is a building full of concepts and criteria to reach a perfect human being (Azemati et al., 2017).

**Table 3. Self-actualization in housing from the perspective of researchers (authors)**

|  |  |
| --- | --- |
| Name of the researcher | The presented definition of self-actualization in housing |
| Zabihi1378 | A house that can help as many people as possible to achieve self-actualization can be considered a desirable House.  |
| Pourdeihimi et., al.1390 | The proper response of housing to human needs is the house as a privacy and social and cultural unit that transforms the residential environment into a platform for intellectual, spiritual and psychological improvement of human beings. |
| Estaji2014 | An Ideal House is a building that covers all human needs. Based on the amount and type of needs met by a building, the house can be evaluated |
| Azemati et., al.2017 | An ideal house is a place that provides the unity of its constituent elements and reveals the deep meaning of residence. |
| Karimi et., al.1397 | Human naturally seeks perfection and therefore needs to manifest himself by flourishing his abilities. He expects the house to provide a suitable platform for this. |
| Marcus1399 | The reflection of a person in his home, which seeks to build and reflect on the environment and then make an impact on the environment, is a step towards his self- actualization. |

Today's housing cannot be considered just a shelter and it is expected that this space can play a strong and effective role in meeting the transcendental needs of people. Therefore, considering the importance of self-actualization motivation and its effective role in people's mental health, paying attention to this important issue in the design of residential complexes, due to the wide capabilities of this type of housing, can be an important step towards the growth and excellence of society. In this regard, considering the impact of the housing environment on people; By correctly identifying and using components and dimensions Effective on self-actualization in residential spaces, it can play an important and effective role in facilitating the achievement of self-actualization in people.

**Research Method**

The current research was conducted using a combined method (quantitative and qualitative); Thus, the first phase of the research will be quantitative and qualitative, the second phase will be quantitative and qualitative, and the third phase will be qualitative. In the first phase of the research, it is done in order to examine the background of the research and extract the architectural factors and spatial attributes that are effective on self-actualization. In the following, the Delphi method is implemented in order to verify the effective criteria on self-actualization. Delphi method included An open-ended interview is conducted with 21 experts in the fields of architecture and psychology in order to investigate the factors affecting self-actualization in residential complexes. In the following, the open and axial coding of the continuums is done, and based on this, the goal-content table is prepared and engraved and modified by experts. Finally, the expert questionnaire was designed and completed by 20 experts and the Q factor analysis done and the design dimensions of residential complexes are introduced from the point of view of experts. The mentioned steps finally lead to the preparation of the researcher's questionnaire based on the results of the Delphi method, and the questionnaire is used to survey users after confirming its content, structural validity and reliability. In the second phase of user survey which includes 290 residents of residential complexes in Shiraz, it is done by a questionnaire that was prepared in the first phase, and finally, the information obtained from the survey of residents of residential complexes is entered into Spss software. and R factor analysis It is implemented in order to achieve effective components on the design of residential complexes based on self-actualization. At the third phase, which is done with the correlation method, the results of the survey method are used for modeling. Structural equation modeling refers to a set of related processes, and in the existing literature, different equations such as covariance structure analysis, covariance structure modeling, and causal modeling have been used to introduce it (Kline, 2011). Structural equation modeling is one of the types of correlation analysis and a special causal structure between a set of hidden variables and observable variables (Habibi and Kolahi, 2022). In the present research, in the third phase, in order to present the structural model of the research, according to the theoretical foundations, the communication network between seven factors extracted from the results of the survey method has been developed in the form of preliminary modeling. After drawing the model, research variables including independent variable and dependent variable are determined. In the following, the modification and editing of the developed theoretical model will be discussed using Amos software. At this stage, this software is used to measure the acceptability of the model, its suitability, and the significance of the relationships between the factors and determine the effect of each variable, which helps to identify how the variables affect each other and report the relationships between the variables in the real world. Finally, the model compiled in the research presents cycles that can lead to the self-actualization of the residents in a context of time. The research process is presented in the figure 3:

**The main goal: providing a model of physical spatial components effective in improving the self-actualization of residents of residential complexes**

Self-Actualization

Human Needs

Residential Complexes

**Modeling the design of residential complexes based on residents' self-actualization**

First question: What are the architectural components of residential complexes based on residents' self-actualization?

Second question: Which model among the design components of residential complexes based on the self-actualization of people in residential complexes is graceful and established?

Desirable Housing

Housing

Third phase

Correlation

Quantitative

Data analysis by Spss software

Open and axial coding

Second Phase

User navigation

Quantitative

First phase

Exploratory

Document mining and Delphi technique

Quantitative and qualitative

Refer to documentary sources

Summarizing the basic concepts of the research

Compilation of contents

Open-answer interviews with experts

Preparation and distribution of expert questionnaires

Preparation of the table of purpose-content

Data analysis by Spss software

**Presentation of environmental and architectural factors and attributes effective on self-actualization extracted from sources**

Presenting the design dimensions of residential complexes based on self- actualization from the point of view of experts

Compilation and validation of user questionnaires

Distribution of user questionnaires

Providing effective components on the design of residential complexes based on residents' self-actualization

Preparation of the target-content table of users

**Presenting the design model of residential complexes based on residents' self-actualization**

Examining the relationships between components and developing a research model

Causal modeling using Amos software

Studying the effects of mediating variables

**figure 3. Research process (authors)**

**Statistical Society**

In this research, the statistical population in the document mining stage is Persian and English sources, which were selected by simple sampling method. In the Delphi method, the community of experts who will cooperate with the researcher includes 21 people in the interview stage and 20 people in the questionnaire stage, experts in the field of urban planning, architecture and psychology. At this stage, the first people have been introduced and selected by the theoretical method and the next experts by the snowball method, and the sampling process has continued until reaching the theoretical saturation. In the user survey phase in this research, adults living in residential complexes are examined, and the sample size will be 290 people, according to Kline (2011) who suggests five people for each item, which in this sampling phase the studied complexes in a random cluster form include five complexes of Derak, Bu Ali, Jannat, Mabaas and Modarres in Shiraz city.

**Validation of Research Tools**

The reliability and validity of the questionnaire are always set as criteria by the researchers in order to evaluate the quality of the scale. The validity of the researcher's questionnaire depends on the validity and reliability of its questions, and a test must be reliable in order to be valid Therefore, it is necessary for the researcher to ensure its validity and reliability scientifically before using the questionnaire tool (Mohammed Beigi et al., 2013). In this study, Cronbach's alpha coefficient was used to determine the reliability of the user questionnaire. Cronbach's alpha coefficient of 0.969 was calculated, which means "excellent", which is an acceptable coefficient and indicates the validity of the current research questionnaire. The results are shown in Table 4:

**Table 4. Reliability Statistics (authors)**

|  |  |
| --- | --- |
| **Cronbach's Alpha** | **N of Items** |
| .969 | 58 |

In every research, determining the validity of the instrument, including the content and construct validity used, must be checked and evaluated (Mohammadbeigi et al., 2013). Therefore, due to the importance of a detailed examination of the validity in this research, the validity of the instrument has been fully investigated, the face validity was determined using the theoretical consensus of the experts, the content validity was determined by the purpose-content table, and the structural validity was determined by using factor analysis.

**Discussion and Findings**

After entering the information into the Spss software, the value of the KMO index in this research was calculated as 0.928, so the adequacy of the sample size is very appropriate. The significance level of Bartlett's test is equal to 0.000 which is accepted. Table 5 shows the values of KMO and Bartlett indices related to the analysis of the R factor on the users' questionnaire:

**Table 5. KMO and Bartlett's Test (authors)**

|  |  |
| --- | --- |
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .928 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 111138/750 |
| Df | 1653 |
| Sig. | .000 |

As shown in the scree diagram (Figure 4), the hypothetical line of the diagram is broken from the 11th factor onwards and starts to flatten, the first and second factors are significantly larger and have a higher level of significance.



**Figure 4. Scree Plot**

According to rotated data matrix statistics, definable and meaningful factors can be identified and placed in the relevant category. At this stage, after identifying the significant factors and the questions that include them, each factor is defined and named.

Table 6. labeling the factors resulting of the factor analysis with their question number

|  |  |  |
| --- | --- | --- |
| **Question number** | **components** | **Group number** |
| Questions 24, 22, 25, 1,30, 26, 20, 29, 2, 33, 7, 6, 41, 9, 27, 12, 5, 10, 48 | creative environment | Group 1 |
| Questions 57, 58, 56, 21, 16, 46, 11, 18, 23 | eventability | Group 2 |
| Questions 35, 55, 37, 42, 39, 38, 36 | diversity | Group 3 |
| Questions 50, 51, 52, 53, 49, 54 | participatability | Group 4 |
| Questions 43, 44, 45, 19 | social interactions | Group 5 |
| Questions 32, 31,40,28 | environmental safty | Group 6 |
| Questions 15, 13, 47, 14  | Discoverability | Group 7 |

The naming of the concepts has been approved and revised by 5 experts and has finally been approved by the supervisor. The seven components of "creative environment", "eventability", "diversity", "participatability", "social interactions", "environmental safty" and "Discoverability" have been introduced as components of the design of residential complexes that affect the self-actualization of residents. These components are grouped as shown in Figure 6:



**Figure 6. Classification of components resulting from R factor analysis**

In order to formulate the communication network research model, the seven components of the research in the form of a modified and final model of the factors that make up the design of residential complexes based on the self-actualization of residents can be seen in the form of Figure 5, in the presented model, the path coefficient of each variable is specified on the corresponding arrow.



**Figure 5. Final model of research by AMOS (authors)**

According to Table 9, the absolute fit indices of the model are first examined; The goodness of fit index of the model, abbreviated as "GFI" and the adjusted goodness of fit index "AGFI" in this research are estimated as "1.000" and "999.000", respectively, which indicates the excellent fit of this model. "P" indicates a significant level, which in the model of this research is equal to the number "/981" and indicates that if the research model is done 1000 times, it will be repeated 981 times. The CMIN/DF index, which is the division of the chi-square by the degree of freedom, is equal to 0.019, which indicates that the model has reached an excellent fit.

It is one of the relative fit indices of TLI and NFI models, which are respectively referred to as "Tucker-Lewis index" and "Bentlerbont index or normalized fit index", which show the values of "1.018" and "1.000" respectively. The indicators based on non-center include the CFI index, which is referred to as "comparative fit index" and also the root mean square error of estimation in short: RMSEA in the model of this research was obtained as "1.000" and "0.000" respectively, which Acceptance. All the mentioned indicators show that the modified model is approved and accepted with the "excellent fit" level.

**table 9. The Comparison of Goodness of Fit Indices and Model Fit Results (authors)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **References** | **Perfect fit** | **Comments** | **Model Results** | **Fit Index** |
| Rehman et al. 2015, Hu & Bentler 1999 Browne & Cudeck, 1993, Hooper et. al 2008, Kline, 2011 | GFI$\geq $0/95 | Perfect fit | 1.000 | Goodness of Fit IndexGFI | **Absolute Fit Indices** |
| Jöreskog & Sörbom, 2001 | GFI$\geq $0/95 | Perfect fit | .999 | Adjusted Goodness of Fit Index AGFI |
| Brown 2006, Hu & Bentler 1999 | RMR ≤ .05 | Perfect fit | .012 | Root Mean Square ResidualRMR |
| Byrne 2016 | P$\geq $0/05 | Perfect fit | .981 | Probability Level P |
| .038 | Chi square CMIN |
| - | - | Perfect fit | 2 | Degree of freedom DF |
| Kline, 2011; Gefen et al. 2000, Sümer, 2000 | CMIN/DF$<$2/0 | Perfect fit | .019 | CMIN/DF |
| Hu & Bentler, 1999 | TLI ≥ .95 | Perfect fit | 1.018 | Tucker-Lewis Index TLI | **Relative Fit Indices** |
| Tabachnick & Fidell 2007, Hu & Bentler, 1999 | NFI$\geq $0/95 | Perfect fit | 1.000 | Bentler-Bonett Normed Fit Index NFI |
| Hu & Bentler 1999, Byrne, 2016, Tabachnick & Fidell, 2007, Lei & Wu 2007, Bentler, 1992 | CFI$\geq $0/95 | Perfect fit | 1.000 | Comparative Fit IndexCFI | **Non Centrality-Cased Indices** |
| Hooper et al. 2008, Hu & Bentler, 1999 | RMSEA$\leq $0/05 | Perfect fit | .000 | Root Mean Square Error of Approximation RMSEA |

The details of the effects of the variables and the standardiezd direct effects and the standardized indirect effects, the standardiezd total effects and the standard error related to the bivariate eeffects of the variables are presented in Table 8:

**table 8. Standardized direct and Indirect Effects and Standardized Total Effects (authors)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Construct | Standardized Direct Effects (Standardized Regression Weights) | Standardized Indirect Effects | Standardized Total Effects | Standard Errors |
| Diversity ← Participatability | .128 | -.499\*\* | -.372\* | .068 |
| Creative Environment ←Discoverability | .318\*\* | .030 | .348\*\* | .084 |
| Social interactions← Eventability | .396\*\* | -.245\*\* | .150\*\* | .102 |
| Discoverability ← Environmental Safety | -.895\* | .608\* | -.287\* | .620 |
| Discoverability ← Diversity | 1.690\* | -1.148\* | .542\*\* | 1.778 |
| Environmental Safety ← Participatability | 1.123\*\* | -.040 | 1.084\*\* | .149 |
| Diversity← Creative Environment | .345\*\* | -.222\* | .122\*\* | .066 |
| Participatability ← Eventability | -.423\*\* | .465\*\* | .042 | .157 |
| Creative Environment← Eventability | .839\*\* | -.739\*\* | .100 | .093 |
| Eventability← Discoverability | .949\*\* | -.644\*\* | .304\*\* | .173 |
| Creative Environment← Participatability | .271\*\* | .370\* | .641\*\* | .108 |
| Participatability← Social interactions | 1.347\*\* | -.048 | 1.299\*\* | .183 |
| Diversity← Eventability | .847\*\* | -.486\* | .362\*\* | .103 |
| P7 < 0.01 = \*\*, P < 0.05 = \*, P > 0.05 = - |

In the following, each of the components will be examined separately:

• **Creative Environment**

In order to create a creative environment in residential complexes, providing a platform for creative activities is one of the most important measures, in this regard, the formation of events in which it is possible to participate can encourage people to be present in the space and show creativity by them, according to Madanipour (2013) events provide a suitable environment for the growth of creativity (Madanipour, 2013). Also, the information richness of the environment and the provision of scientific and general information to the residents through the boards and educational activities formed in the complex can lead to the creation of a learning environment. Burleson (2005) considered learning and creativity as two factors to encourage people to achieve self-actualization. knows (Burleson, 2005). In the environment of residential complexes, the formation of opportunities for the personalization of the space can be achieved through the possibility of mastering and controlling the environment. According to Kovtun's research (2014), solitude and solitude help to focus and accumulate energy for creative work by increasing the process of thinking and introspection (Kovtun, 2014). In the spaces of residential complexes, providing individual privacy can be a suitable space for thinking and contemplation provide For this purpose, the existence of single chairs in cozy and relaxing spaces in the heart of nature, which have a defined privacy by retreating and lighting, and in order to maintain the psychological security of people, can be monitored and safe. Provide a place for residents to sit and watch the scenery, study or think and meditate. Finally, considering the effect of cultivating people's creativity in facilitating the achievement of self-actualization, the "creative environment" component can be considered as the basis for facilitating the achievement of the residents of residential complexes to achieve self-actualization.

• **Eventability**

 In order to design the environment of residential complexes with an eventability component, the design of meeting hall and multi-purpose hall with appropriate spatial dimensions can provide a platform for the formation of meaningful friendly and family events in the environment. According to the research results of Gharehbaglou Khaleghi Moghaddam (2016). It seems necessary to create a platform for the formation of events and ceremonies in a residential complex in order to meet the need for self-actualization (Gharehbaglou and Khaleghi Moghaddam, 2016). In the open air of residential complexes, holding group exhibitions and happy and lively events can provide a platform for the formation of happy and attractive environmental events. Also, the visual enhancement of the venue by placing the area in a place overlooking other places and making visible what is going on in the space can be effective in inviting people. Designing an open-air amphitheater for holding shows, music performances, reading books and reciting the Shahnameh by children and adults can provide the background for happy and memorable social events. Therefore, the events formed in the environment can bring people together and give them an opportunity to become aware of their capabilities and abilities through participating in the events held in the complex and accepting various responsibilities. And these events can provide a platform for people to express themselves and to be aware of people's potential talents. In addition, the formation of the ground for exciting team sports and games in residential complexes can be done by designing gyms and yoga, swimming pools and Jacuzzis, open sports spaces, parks and playgrounds for children and adults. It will be provided with optimal spatial dimensions and facilities. In the meantime, it should be noted that these spaces should be designed in such a way as to ensure the hearing comfort of other residents through proper location and the use of plant walls or soundproof walls. In this way, environmental events formed in residential complexes by creating opportunities for various activities in the environment will provide the basis for achieving self-actualization of the residents.

• **Diversity**

The design of the environment of residential complexes is done by taking advantage of the diversity component despite the diversity of spaces, activities, uses, materials and furniture in the environment of residential complexes. Diversity in the use and activities formed in the environment of the complexes by giving the right to choose to the individual increases the satisfaction of the residents with the space and increases the possibility of actively participating in the chosen activities. In addition to this, the use of various and attractive furniture such as single chairs, sitting edges, gazebos with comfortable and suitable furniture using various geometry and colors in open spaces and lobby and corridors of the complex in a way that integrates with nature to the people of this. It allows them to be in the space as social groups or as individuals and study, rest, talk and watch natural and attractive sights. According to the results of the research of Alaghemand et al. (2018), spatial diversity can be effective in realizing people's self-actualization by giving freedom of choice to the individual (Alaghemand et al., 2018). Therefore, the design of residential complexes by considering the component of diversity, which is realized by considering diversity in spaces, uses and activities; It can facilitate the achievement of the level of self-actualization in the residents of residential complexes

• **Participatability**

The component of participation in the environment of residential complexes can be provided by giving environmental facilities to people to intervene and change the environment. In this regard, the design of cooperative parks in residential complexes in marginal and safe areas and the possibility of planting plants encourages the residents to participate in the environment, in addition, by providing the freedom of action and choice of people in the environment, it is possible to provide the possibility of free intervention of people in the environment. In this regard, multi-functional facilities and spaces can be the right of choice for residents increase in the environment. In addition, the existence of environmental facilities and changeable and flexible furniture in the open and middle spaces and movable partitions in the walls and windows so that a person can change the environment according to his taste and needs increases the possibility of engaging the person with the existing environmental facilities and spaces. And personalization of the space is done by the individual; In this regard, providing opportunities through design in order to personalize the space according to the opinion of Lang (1994) can answer the need for self-actualization (Golkar, 2019). In addition to the arrangements that can provide the possibility of collective creative participation in the environment of the complexes, space design for performing teamwork and the presence of walls and surfaces suitable for collective painting and memento-writing is what gives people the possibility to make a creative work of their own. let them and make the environment their own. Participation in the environment by engaging with the environment through an activity, from the point of view of Csikszentmihalyi and Nakamura (2010), leads to self-actualization (Csikszentmihalyi and Nakamura, 2010). In this way, the component of participation, through the opportunities it provides for the individual in order to show his abilities and his reflection in the space, can be the basis for the residents to achieve self-actualization.

• **social interactions**

In the environment of residential complexes, the existence of a social space and the interactivity of the space can lead to sincere social interactions between people, in order to form a friendly social space, spaces with specific privacy can be defined with benches and chairs close to each other, in this regard, the design of conversation rooms can be provide suitable for privacy and friendly conversation, as well as designing focal spaces and using interactive geometry in lobbies, floor entrance space and open space and environmental nodes arranged with centripetal furniture can be an environment where intimate communication is formed between people. In addition, the design of intersecting paths in order to increase the chances of people meeting each other increases the possibility of social interactions between residents. In line with the role of social interactions in self-actualization, we can refer to the research of Hanley and Abel (2002), which in this study considers interaction with other people as one of the things that lead to people's self-actualization (Hanley and Abel, 2002). In addition, the formation of collective and memorable events in the environment of residential complexes and the formation of common memories causes intimacy between people; In this regard, Maslow points out that if suitable environmental conditions are provided for people to love each other, self-actualization will be possible for people (Piedrahita, 2014). Therefore, the formation of effective and deep social interactions between people in a social environment that is interactive and intimate in residential complexes can be effective on the self-actualization of residents.

• **Environmental safty**

Designing the spaces of residential complexes using the environmental security component can facilitate the achievement of residents' self-actualization, in order to design residential complexes with the environmental security component, the design of routes and spaces should be done in a safe, legible and visible manner. In this regard, the design of the passages should be done in a direct and visible way and in a specific and defined way. Also, lighting and using environmental signs and signs with bright colors on the side of the paths can facilitate the understanding of space and navigation for people and provide psychological comfort of the person in the environment. In addition to this, the possibility of monitoring public and semi-public paths and spaces of the complex, which is achieved by monitoring the complex area, can ensure the psychological security of the residents and provide the possibility of being in a safe space for the residents of residential complexes. In the open spaces of residential complexes, the formation of privacy and solitude at different personal and social levels for people can be done by sitting back and defining boundaries by changing the height, color, lighting, wall and floor materials. In addition to this, the separation of public and private spaces and areas by defining and specifying the borders and spaces and respecting the spatial hierarchy can ensure the privacy of people. Observance of visual privacy and auditory privacy is necessary, in this way, it can be expected to ensure the safety of people in different dimensions and levels. According to Seyfiyan and Mahmoudi (2007), because having a sense of security and safety, a sense of privacy, comfort and peace is necessary in order to achieve self-actualization, therefore housing should be able to provide different degrees of security for residents in order to respond to the need for self-actualization (Seyfiyan and Mahmoudi, 2007). which can include providing environmental and psychological security and mental comfort of people. In this way, providing environmental security and mental comfort for the residents of residential complexes can be considered as one of the influencing factors for people to achieve self-actualization.

• **Discoverability**

In the environment of residential complexes, using the element of discoverability can affect the self-actualization of residents, in order to take advantage of the discoverability factor of the environment in residential complexes, forming attractive environmental complications such as labyrinth paths for movement and exploration in the middle open space can stimulate the curiosity of people and Encourage people to search the environment. Regarding the effect of discoverability on self-actualization, Weaver (2010) acknowledges that since achieving self-actualization is an "exploratory" process, architecture can be the basis for the realization of self-actualization in people by using the component of discovery and encouraging people to search in the environment (Weaver, 2010). Also, in the design of open and closed spaces that are integrated with nature and have an organic and complex texture, it can be curious for people and invite people to explore a natural and enclosed, safe and secure environment with the ambiguity they create in the space. Also, using diverse and tangible textures on the floor and walls, using water feature, fountains and playing with different states of water, and using fragrant and colorful plants can form an explorable environment by engaging one's senses. In this regard, Weaver (2010) It acknowledges that the need for self-actualization can be enriched through the discovery process by creating opportunities for sensory experience. (Weaver, 2010). According to Pallasmaa (2018), by involving all the senses of the person, architecture leads the person's consciousness towards the world and its nature and existence (Pallasmaa, 2018). In addition, in the spaces of residential complexes, the use of symbolism can cause thinking and reflection on the meaning of the work, which leads to the establishment of interaction between the person and the space, which can make the environment explorable, for this purpose, the use of elements, sculptures, images, and environmental art. It can play an effective role in corridors, lobbies and open spaces of residential complexes. In this regard, Weaver (2010) believes that the symbolism of the environment can induce self-fulfilling values to architecture (Weaver, 2010). Therefore, the search and exploration of the environment of residential complexes in the form of creating ambiguity and meaningfulness of the environment and making people curious to search and explore the environment can facilitate the achievement of self-actualization in the residents of residential complexes.

**Conclusion**

The current research was written with the aim of obtaining a causal model of the design components of residential complexes based on responding to the residents' self-actualization needs; Due to the fact that achieving self-actualization is equal to reaching the optimal level of mental health and people who achieve self-actualization achieve an optimal level of mental health and creativity, the concept of self-actualization as a psychological necessity is of special importance, therefore it deserves all environmental capabilities should be used in order to respond to human needs and achieve a degree of self-actualization in the highest degree. In order to achieve the main goal of the research, which was to achieve the design model of residential complexes based on the realization of the residents' self-actualization, the current research is in three stages. It was done, which included the Delphi method and sand mining, user survey and correlation. The results of the first stage, including sandblasting and the Delphi method, presented the effective dimensions of self-actualization from the experts' point of view that these dimensions are introduced as the mental models of architectural experts around the topic under discussion, in the second stage, after the survey of users who are residents of residential complexes, in order to fulfill the purpose of the research, which was to determine the design components of residential complexes based on the self-actualization of the residents, The design components of residential complexes based on residents' self-actualization were introduced and explained. In the following, modeling has been done according to the relationship between the mentioned components, the fit and acceptability of the presented model was examined and confirmed. Finally, we can admit that by observing the design principles of residential complexes can witness the improvement of the level of self-actualization of adults living in the complex, and this can be seen from aspects such as the functions and activities formed in the environment, the meaning and perceptions of the environment, the body of the environment, The experiences formed in connection with the environment and interactions at different levels originate in the direction of design by using components that affect the self- actualization of designers in future designs. Designing Spaces that provide mental security and comfort for people, designing spaces with the ability to form events, the possibility of users' intervention and control over the environment, the use of nature in the complex environment, the formation of the ability to explore and search the environment and the interaction of the individual with the environment, the possibility of fostering creativity In the environment, the design of interactive spaces for the interaction of the individual with the environment and people of different age groups with each other, the possibility of forming diverse activities and functions in different spaces of residential complexes, can improve the usefulness of the spaces for the prosperity of the residents in the complexes. To increase housing, which leads to the recognition and expression of the true self of the individual and the reflection of the individual in his life space through participation and personalization of the environment. In pursuit of achieving self-actualization and reaching the maximum internal capacities, one can see an increase in the psychological well-being of the residents, as well as an increase in creativity and achieving an optimal level of mental health in the community, and one can expect the quality of his communication with others and the quality of his individual life to a significant extent; Although the achievements of this matter will be realized in a longer period of time, they will have more lasting effects. in the end It is clear that limitation in all researches is an unavoidable issue and should be taken into consideration. In this research, the first limitation is related to the research tool, which is the construction researcher. This limitation is related to the number of contents of the questionnaire, and even though it has been tried to consider all relevant topics by compiling the table of objectives and contents, it is still possible that some related theoretical and practical contents are hidden from the researchers. The second limitation is related to the limitations of access to experts, which denied the researcher the possibility of interviewing and presenting the questionnaire in person. The third limitation was related to the limitation of users and experts in accessing the Internet during the user navigation phase, which made it difficult for people to access the electronic questionnaire. Therefore, the QR code assignment methods and paper questionnaire were used for the access of the residents of residential complexes to the questionnaire. As a suggestion for the future, the current research in the direction of generalizability can be done with a similar research method on other urban spaces such as offices, cultural and educational environments for children and teenagers. Also, in this research, due to the scope of the survey work, it is specific to adults living in residential complexes, but it seems that part of the results can be generalized to people of other age groups as well, so it is suggested that other age groups should be used in future research in order to develop The research area should be investigated.

**Achieving Self-actualization in Residents of Residential Complexes**

Encouragement to think

Questioning the environment

Transferring the experience of presence to the audience

Associating mental schemas

Creating a two-way relationship between the audience and the work

The deep connection and intimacy of the resident and the housing

Continuous meaning making and meaningful experiences

Growth and development of individual creativity

Moral and social growth and maturity

The formation of trust between people

Cooperation and interaction between people

Formation of strong neighborhood units

Acceptance of responsibility by individuals

social Support

The formation of positive experiences in the environment

The possibility of intervention and control of the environment

The possibility of self-expression

Personalization of the environment

freedom of action

Self-reliance and independence in the environment

The possibility of solving the problem

Share ideas with others

Searching for identity and knowing one's nature

The songs of human aesthetic needs

Knowledge of events and facts

Remembering human values

Personal growth and development

Leading the person to the realm of consciousness

Sense of Stability

The growth of personal development

Response to human needs and growth process

Knowledge of events and facts

Self-discovery

Feeling of self-esteem and dignity

Responding to human psychological and spiritual needs

Asking and finding answers to cognitive questions

Achieving individual identity

Encouragement to introspection

Strengthening the concept of self and its nature

Discover the deep layers of your existence and nature

The exaltation of human condition

 Pushing one's consciousness towards the world

Achieving a higher position of existence

 Reaching beyond the senses

Answer to the sense of aesthetics

Knowing your identity and nature

The formation of peak experiences

Attention to the wonders of nature and peak experience

Freedom of choice in the environment

**Conceptual Strategies**

**the design components of residential complexes**

**the design dimensions of residential complexes**

**Factors affecting self-actualization**

Creative Environment

Eventability

Participatability

Social Interactions

Environmental Safety

Discoverability

Diversity

Physical

Functional-Activity

Cognitive-Semantic

Perceptual-Experiential

Interactive-Social

**figure 5. Achieving self-actualization in Residents of Residential Complexes (authors)**

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