The Influence of "Culture from Rappaport's Viewpoint" on "Mental Image" and Examining the Role of this Influence on the Formation of the Environment*

Pariya Shafipour Yourdshahi[a]- Mostafa Kiani[b]- Sara Hamzeloo[c]- Manouchehr Moazemi[d]**

[a] Ph.D. Candidate of Architecture, Department of Architecture, Karaj Branch, Islamic Azad University, Karaj, Iran.

[b] Associate Professor of Interior Architecture, Faculty of Architecture and Urban Planning, University of Art, Tehran, Iran (Corresponding Author).

[c] Assistant Professor of Architecture, Karaj Branch, Islamic Azad University, Karaj, Iran.

[d] Assistant Professor of Interior Architecture, Faculty of Architecture and Urban Planning, University of Art, Tehran, Iran.

ABSTRACT

Built environments in any region have unique features reflecting the specific culture of that region because environments are formed based on people's mental patterns and these mental patterns are formed in people's minds according to their culture. People's mental images have been formed due to certain factors over time, and have played a significant role in creating sensory and emotional relationships and correct actions and reactions between people and their living environment. Therefore, studying the relationship between culture and architecture requires the investigation of people's mental images influencing the built environment, and the examination of cultural components and how they relate to the mental image. The present study is fundamental qualitative research carried out descriptively and analytically. Using documentary and library studies, the present study examines how clear mental images are formed in people's minds based on the cultural components extracted from Amos Rapaport's viewpoint to relate the two concepts of culture and mental image to show how they influence the built environment, what their important role is in the formation of built environments, and how the interaction between them and built environments is. Also, after extracting the components from Rappaport's viewpoint, for each of the components, according to their classification, two examples of Iranian architecture are selected and analyzed in the form of tables. The results show that culture from Rapaport's viewpoint influences the mental images created in people's minds. Moreover, the examples presented for cultural components indicate that lifestyle (environment-behavior interactions), social relations (caused by culture and mental patterns), customs (as a result of the repetition of behaviors), and opinions and beliefs (created over time) can be part of physical and perceptual-psychological factors of mental images and people form their environments based on these mental images. Therefore, the mental images formed in people's minds are effective in the formation of the environment.

Keywords: Culture, Mental Image, Built Environment, Rapaport, Architecture.

1. INTRODUCTION

Acquaintance with Rappaport's thoughts and viewpoints on culture has provided the ground for using them in architecture, especially in Iran. All environments are the result of choosing solutions from among all possible ones. These special choices represent the culture of that society (Rapaport 2007, 68). The built environment is the material manifestation of mental patterns (Rapoport 1980). People's mental images can affect their feelings about the environment because according to Relph, a place has three characteristics of physical elements, activities, and meanings that make it a place with a mental image for a person (Relph 1976). Also, the form of any object can play a significant role in creating its mental image (Lynch 2016, 15). Therefore, the relationship between people's culture and mental images is an important issue. In this regard, the research questions are as follows: A- What are the cultural components affecting the mental image? And B- How is the impact of culture from Rappaport's viewpoint on the formation of the environment? The research hypotheses are including 1. It seems that people's lifestyle, customs, and beliefs affect their mental images; and 2. From Rappaport's viewpoint, culture influences the mental images created in people's minds, and these mental images create ideals based on which people form their environments. The present study aims to examine the relationship between culture and mental images created in people's minds and their impact on the formation of built environments from Rappaport's viewpoint. Extensive studies have addressed the concepts of culture and mental image so far. However, reviewing the research background indicates that the relationship between these two concepts and how environments are formed based on them have not been investigated in detail. Therefore, the present research addresses the relationship between culture from the perspective of Rapaport and mental image and their impact on the environment. To this end, culture is first defined from Rapaport's viewpoint and its role in the formation of the environment and behavior is recognized. Also, the dismantling of culture into components and variables is presented in the form of a diagram presented by Rapaport. Next, mental image factors according to different researchers are investigated. Then, each of the mental image factors is described and how they relate to culture is examined.

2. METHOD

The present study is fundamental qualitative research carried out descriptively and analytically. Using documentary and library studies, the present study try to show the relationship between culture and people's mental images and examine their role in the formation of the built environment. In the present study, the required data were collected through documentary studies. Also, after extracting the components from Rappaport's viewpoint, for each of the components, according to their classification, two examples of Iranian architecture were selected and analyzed in the form of tables.
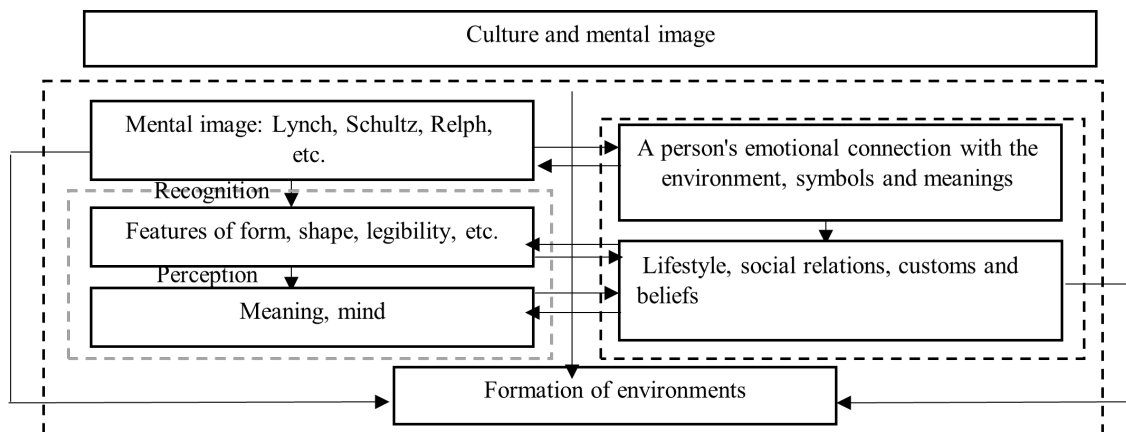

Fig. 1. Theoretical Framework and Conceptual Model

3. RESEARCH BACKGROUND

This section addresses the concept of culture from Rapaport's viewpoint and reviews the studies on Rapaport's theoretical framework. Moreover, the concept of mental image is reviewed from the points of view of numerous researchers.

Table1. Several Studies of Rapaport

No.	Article/Book	Year	Research Topic
1	House form and Culture	1969	This article discusses the architectural forms in each region. These forms express the symbolic nature of the buildings. Also, the form of houses and buildings can show cultural performance and religious orientation
2	Neighborhood Heterogeneity or Homogeneity	1980	This article states that everything is subjective and comes from the external environment.
3	Development, Culture Change, and Supportive Design	1983	In this article, Rappaport analyzed the traditional and famous environments and considered the results acceptable for the executed designs. Because he believes that a conceptual model of the human-environment connection can be obtained from these analyses.
4	Culture, Architecture, and Design	2005	In this book, Rappaport fully examines the culture in the environment-behavior study and according to the definitions provided, fully describes the dismantling of culture and defines culture for humans.
5	The Meaning of the Built environment	2005	In this article, Rappaport believes that culture can be divided into smaller components and examines the four layers of the culture, and expresses the relationship between culture and behavior and activities.
6	Archeology and Environment-Behaviour Studies	2006	In this article, Rappaport considers EBS a useful and special resource for controlled sources in inferring from the remains of material culture about past human behavior, social structure, and organization, and recognition, impact, and overall meaning, especially cultural landscapes, and built environments.
7	Some Further Thoughts on Culture and Environment	2008	In this article, Rappaport addresses the potential role of culture in non-residential environments and rejects the wrong theory stating culture is not important in non-residential environments.
8	Pour Une Anthropologie de la Maison	2009	In this article, Rapaport explains that since constructing a house is completely a cultural phenomenon, its physical form and spatial organization are strongly influenced by the cultural environment to which the house belongs.

Researchers have conducted several studies on Rapaport's theoretical framework, as listed in Table 2.

Table 2. Other Researchers' Studies on Rapaport's Theoretical Framework

No.	Author(s)	Article	Year	Research Topic
1	Aliakbar Heidari, Parisa Mohammad Hoseini	Reading a Home: An Application of Rapoport's Viewpoint in Iranian Architecture Studies	2014	This article examined Qajar houses in Tabriz city, and it was concluded that there is a good relationship between the form of Qajar houses and culture from Rappaport's point of view.
2	Avide Kamrani, Mustafa Behzadfar	The Meaning of Place, A Constant or Changing Quality? Lynch, Rapoport and Semiotics View points	2016	This article states that meaning is changing in part of the place. Place makers should consider the meaning in planning and designing the place, because it influences human life. On the other hand, people always find the meaning of the place. If they could not find the meaning, they attributed their meanings to the place. Therefore, it cannot be ignored or removed in the design process.

No.	Author(s)	Article	Year	Research Topic
3	Mateusz Stepien, Michal Dudak	The courtroom as a built environment: On the usefulness of Amos Rapoport's theoretical framework	2021	This article examines the usefulness of Rapaport's theoretical framework in the interior of the courtroom and concludes that the presented cultural framework from Rapaport's perspective is useful in the form of the courtroom as a built environment.
4	Razieh Labibzadeh, Mahdi Hamzenejad, Abdolhamid Noghrekar, and Mohammad Ali Khanmohammadi	Islamic Review of Rapoport's Environmental Behavior Study (EBS) for Home Space Design Model and Analyzing its Efficacy in Design	2016	This article presents a model for the design values of home space design based on the components of family relations in Islam, so that the level of social interaction between family members can be enhanced based on this model.
5	Reza Shakouri, Ayda Namdari	Study of the Mechanism for Organizing the Environment with the Minimum Physical Elements (Through the lens of Amos Rapoport Theory: Organization of Environment) (Case study: Qashqai Nomad's Dwelling)	2018	This research aimed to investigate and recognize the knowledge used to organize the living environment of the nomads by Qashqai nomads. The results indicated that the minimization of the body has not disturb the quality of the organization of the nomadic living environment, rather, in these environments, the weak role of the body has been enhanced by replacing the constituent components of the semantic system and time management.

In the following, the concept of the mental image is examined, and its various definitions by different researchers are listed in Table 2.

Table 3. Definitions of the Mental Image from the Points of View of Various Theorists

No.	Theorist	Year	Definition
1	Franklin Kilpatrick	1954	The mental image is defined as the presence of new stimuli that no longer fit into previous images.
2	Kevin Lynch	1960	The mental image is the result of a two-way process between the observer and his/her environment, which can be different in different people.
3	M. J. Horowitz	1970	A mental image is an internal representation in one's head or mind.
4	Edward Relph	1976	He considers the mental image a factor giving meaning to the place.
5	A. Rapoport	1977	A mental image is an interconnected set of symbols and landmarks.
6	Christian Norberg schulz	1988	A clear mental image depends on having meaningful places.
7	A. Hachmann & E. Holmes	2004	The mental image includes memories and dreams as well as images caused by involuntary and voluntary selves.
8	L. Stopa	2009	It is a mental representation that may represent a memory, a place, or an event.
9	T. Ronen	2011	It is an experience that, in most cases, is very similar to the experience of understanding an object, an event, or a scene.

According to some researchers, the mental image is defined based on physical factors and structure, and according to others, it is defined based on memories and meaning.
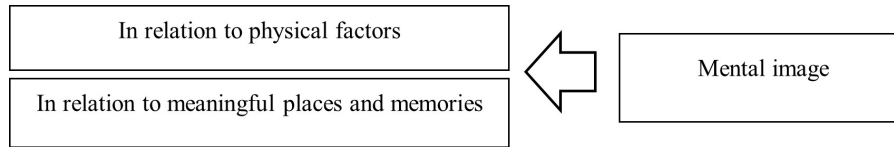
In relation to physical factors	
In relation to meaningful places and memories	Mental image

Fig. 2. Examination of the Mental Image according to Some Researchers

Reviewing the research background shows that although researchers have conducted numerous studies on mental image and Rapaport's theoretical framework, the relationship between culture and mental image, and their roles in the formation of the environment have not been investigated so far. Therefore, the present study addresses this issue considering the importance of the issue.

4. CULTURE FROM RAPPAPORT'S VIEWPOINT

Culture is formed by values. It often represents the ideals of a society in the form of architecture (Rastjoo and Bemanian 2019, 50). According to Rappaport, culture, as an effective factor, plays a significant role in human behavior. Also, culture plays an important role in all three modes of environment-behavior interaction (Rappaport 2012, 32).
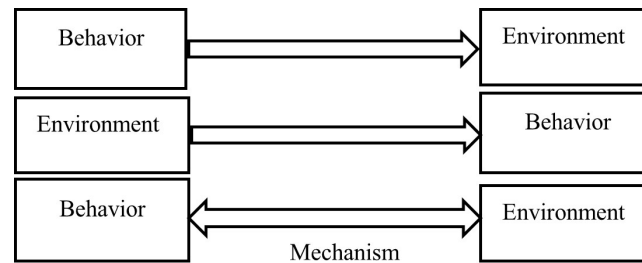

Behavior	→	Environment
Environment	→	Behavior
Behavior	← Mechanism →	Environment

Fig. 3. Types of Environment-Behavior Interaction in Environment-Behavior Studies[1] (EBS)
(Ibid, 27)

Culture is an ideal category, a concept, and an explanation (ibid., 135). Figure 4 provides the diagram of the dismantling of culture (Rapoport 2005).
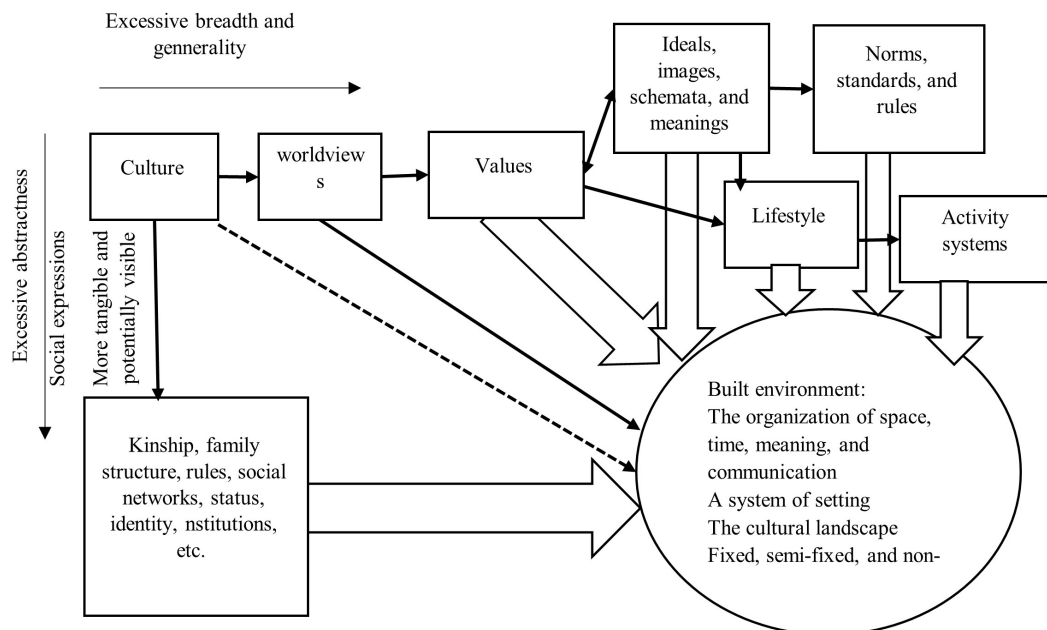

Fig. 4. The Diagram of the Dismantling of Culture from Rapaport's Point of View
(Ibid, 193)

Shafipour Yourdshahi, P. et al.

According to Rapaport's definition, architecture is any construction that organizes and consciously changes the material environment based on a mental pattern. The mental pattern is one of the main products of the human mind. The human mind classifies, differentiates, and organizes. It can be said that order is first thought and then made (Rappaport 2003) and it is the human mind that affects culture. Therefore, mental images are one of the important factors of culture that cannot be ignored in cultural evaluations (Fig. 5).

Fig. 5. The Relationship between Mental Image and Culture and its Role in Built Environments

5. MENTAL IMAGE AND ITS FACTORS

Lynch used the five elements of edge, district, node, landmark, and path as factors organizing people's mental images to achieve goals such as legibility and imageability as the goals of recognizing the city and creating a mental image. Paths and edges are continuous elements. Districts can show the proximity and similarity of elements in a visible scope. While landmarks have elements that are not similar to their surroundings (Lynch 2016). David Stea and Donald Appleyard have also recognized the main features of cognitive maps. Table 4 summarizes the components of the mental image according to three researchers, Kevin Lynch, David Stea, and Donald Appleyard.

Table 4. The Elements of the Mental Image from the Point of View of Theorists

Theorist	The Elements of the Mental Image
Kevin Lynch	Paths; Edges; Districts; Landmarks; Nodes
David Stea	Paths; Boundaries; Barriers; Points
Donald Appleyard	Form Attributes; Visibility Attributes; Use and Significance Attributes

(Lynch 2016)

According to Rapoport, lifestyle is a set of values and meanings. It is a subset of society's culture as a whole (Rapoport 2005, 95). Therefore, society's culture can play a significant role in the formation of people's mental images. And physical factors and perceptual-psychological factors (the appropriate way of finding meaning in life including thoughts, emotions, and feelings) significantly influences the formation of people's mental images.
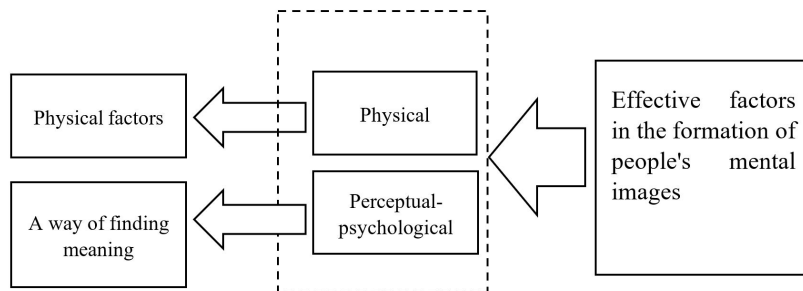

Fig. 6. Effective Factors in the Formation of People's Mental Images

6. RELATIONSHIP BETWEEN MENTAL IMAGE FACTORS AND CULTURE

Physical factors, in the classification of the environment, include important factors: activity and form. The activities governing an environment are defined based on social factors, general actions, and interactions of humans (Motalebi 2006), all of which are one of the four layers of culture according to Rapoport (Rapoport 2009). Rappaport emphasizes that the form finds meaning in the context and understanding this meaning requires the knowledge

of that culture (Rappaport 2005). Before being understood by a person, meaning must first be manifested in the body. In fact, the continuity of the architectural body leads to the continuity of meaning (Malekavarzamani, Sabernzhad, and Pourmand 2020, 195). Form transforms the spaces encompassing humans into environments and gives them a body

(Rasoulpour, Etesam, and Tahmasebi 2020, 116). Rapoport considers the forms in a region to be an important part of early culture and according to him, the forms of houses and buildings can show cultural function (Rapoport 1969, 50). The following figures show the difference in the form in different housing according to Rapaport's analysis.
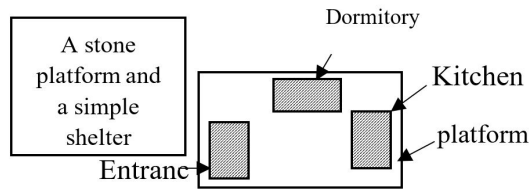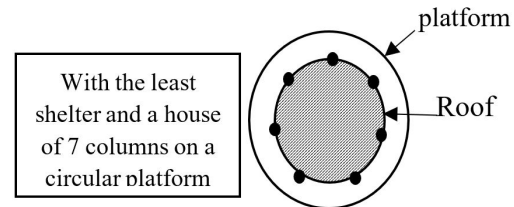

Fig. 7. Marquesas Dwelling
(Ibid, 53)

Fig. 8. Samoa Dwelling
(Ibid, 53)

Physical elements create a mental image in people through environmental differentiation and the communication between the interior and exterior. Shape, which includes size, color, texture, and scale, as one of the features of form, plays an effective role in the formation of mental images (Lynch 2016, 25). On the other hand, physical elements are effective in creating a mental image through congruency and the ability to meet human needs in a place (Motalebi 2006), and an environment that is clear and distinct in the mind not only creates a sense of security but

also enhances the depth and intensity of human experiences (Lynch 2016, 16). Because physical form also plays an effective role in creating an image (ibid., 245). Since people behave based on mental images and not reality (Pakzad 2016, 24) and the shape of the object plays an effective role in creating mental images in people (Lynch 2016, 245); Therefore, in the design of built environments, people's mental images- which are formed under the influence of culture - can provide designers with a clearer path (Fig. 9).
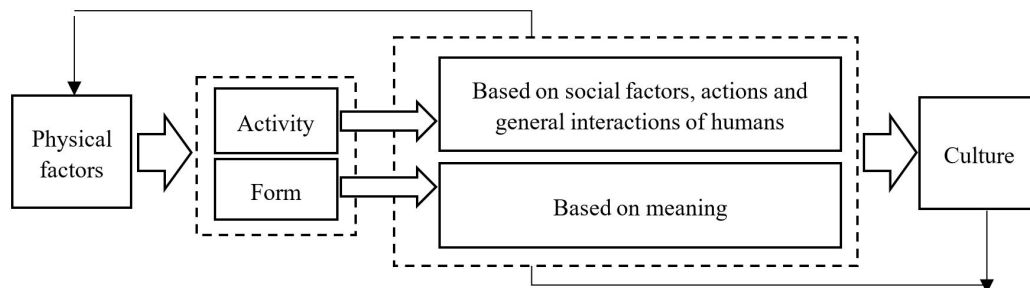

Fig. 9. The Relationship between Physical Factors of Mental Image and Culture

According to the figure above, the physical factors, which are the main factors of the mental image, are directly related to culture. Also, culture can influence the formation of physical factors through meaning and social factors.

Perceptual-psychological factors include a person's emotional relationship with the environment, in which culture, symbols, and social signs are of great importance. People's behavior and performance appear based on the set used in the environment

(Kapogiannis et al. 2021) and the environment is considered a platform for social and cultural activities, where people discover, translate, and interpret physical elements based on their perception and deconstruction system. According to the three main aspects of culture (lifestyle, system of social symbols and meanings, a person's emotional relationship with the environment) (Rappaport 2012, 69), culture includes perceptual and psychological factors of mental image (Fig. 10).
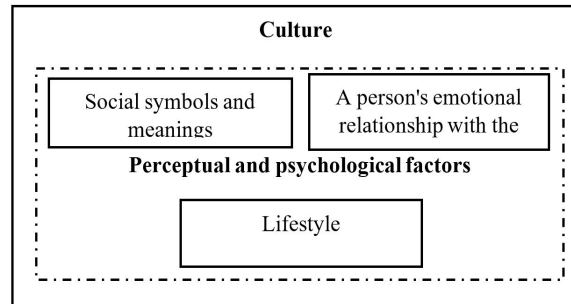
Shafipour Yourdshahi, P. et al.

Fig. 10. The Relationship between the Perceptual and Psychological Factors of Mental Image and Culture

According to the above figure, since the perceptual and psychological factors are the main factors of the mental image and they are a subset of culture, the mental image can also be a subset of culture.

7. INVESTIGATING CULTURAL COMPONENTS FROM RAPAPORT'S VIEWPOINT AND THEIR RELATIONSHIP WITH PEOPLE'S MENTAL IMAGES

According to Rappaport, lifestyle is a set of values and meanings, and as mentioned earlier, it is a subset of society's culture as a whole. Customs are also one of the layers of culture. Culture has different divisions and forms, and there is a need to investigate all aspects and meanings of its forms under the shadow of its credit value in different societies (Rapoport 2005, 95-103).

Lifestyles, customs, meetings and social relations, and beliefs are among the most important cultural behaviors that deeply influence architecture. Differences in lifestyles affect architecture, causing differences in livelihoods (Varmaghani et al. 2018, 239-240). Therefore, according to Rapoport, the four layers of culture are including 1. Lifestyle, 2. Meetings and social relations, 3. Customs, 4. Indigenous and religious beliefs and opinions. Lifestyle is the first layer. It unifies the architecture of the houses and is related to livelihood. It determines how social and kinship relations are established. Meetings and social relations form the second layer of culture in the present study. The third layer includes customs and traditions that emerge as a result of the repetition of behaviors and lifestyles and it is influenced by the fourth layer, i.e. indigenous and religious beliefs and opinions (Fig. 11) (Rapoport 2009).
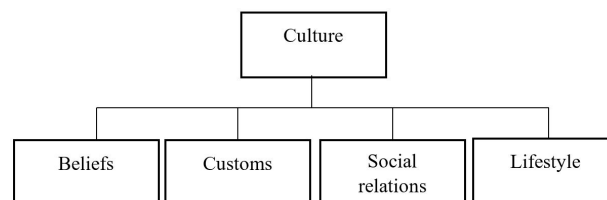

Fig. 11. The Components of Culture from Rapoport's Viewpoint
(Rapoport 2009)

By influencing norms and values, culture is represented in the form of activities and behaviors. This principle takes place through mental images leading to the formation of lifestyle and the establishment of norms and standards (perceptual and psychological factors). It, in the form of behaviors and activities, also influences the formation of the built environment (physical factors). Therefore, the components of culture (lifestyle, meetings and social relations, customs, and indigenous and religious beliefs and opinions) significantly affect mental images. Because people can act based on these mental images formed in them and shape their living environment. In the following, the relationship between the components of culture and the factors of mental images is examined and analyzed in the form

of tables by presenting some examples of Iranian architecture. Since there are numerous examples, after classification, two representative examples of Iranian architecture located in different cities were selected for each section to better draw conclusions on the relationship between the components of culture from Rapaport's point of view and the factors of mental images. The reasons for selecting the case studies in this section are as follows: 1. The case studies were selected in the direction of the main research axis, and in each of which the components of culture from Rapaport's point of view were examined; 2. The case studies were selected from different cities with different cultures; 3. The case studies included both urban and rural examples due to the enjoyment of different cultures; 4. Considering the development

and evolution of Iranian architecture, the case studies were selected from both old and late contemporary examples, about which there is a cultural discussion in terms of time.

Lifestyle is formed based on culture and the mutual relationship between the environment and behaviors causes the special design of environments. People's lifestyles shape the forms of their houses, so the patterns used in Iranian houses can be derived from their lifestyles. Since the Chahar-Soffeh pattern is one

of the most widely used patterns in Iranian architecture (Joudaki Azizi, Mousous Haji, and Mehrafarin 2014, 75), a house with this pattern was selected as a case study for this component (Mola Abdollah House in Boshruyeh) and the second case study was selected from the houses with the sustainable pattern (houses in Masuleh village). In this section, the analyses indicate that Iranian architectural patterns shape the form of houses based on the cultural component of lifestyle.

Table 5. The Relationship between the Cultural Component of Lifestyle and People's Mental Images

Cultural Component	Description	Factors of Mental Images		Case Study	Analysis and Images
		Perceptual-Psychological	Physical		
Lifestyle	Based on culture, each person has a specific lifestyle in his/her mind, which is considered the result of choices about how to allocate resources, and environment-behavior interactions lead to a specific design of environments.	*	*	Mola Abdollah House in Boshruyeh	The Chahar-Soffeh pattern in Mola Abdollah House (Gholami and Kavian 2017, 35) The Chahar-Soffeh pattern is one of the oldest patterns used in Iranian architecture, which has appeared in different forms and different types of architecture according to people's lifestyles (Ibid, 35).
				Houses in Masuleh village	Houses in Masuleh village (Zarghami, Khaki, and Sadat 2016, 19) According to people's lifestyles, the houses in Masuleh village have features such as harmony with nature, optimal use of solar energy, and use of local materials. These houses meet the daily needs of their residents with their spatial flexibility (Ibid 2016, 19).

For each person, social relations are also possible in a particular body based on what is in his/her mind and his/her culture. Public places provide opportunities for people to have social relations with each other. Considering the multiplicity and variety of public

places for establishing social relations, Table 6 shows two examples of outstanding squares (Naqsh-e Jahan Square in Isfahan, and Shahrdari Square in Rasht) in Iranian architecture, which are among the most important places for people to meet each other.

Shafipour Yourdshahi, P. et al.

Table 6. The Relationship between the Cultural Component of Meetings and Social Relations and People's Mental Images

Cultural Component	Description	Factors of Mental Images		Case Study	Analysis and Images
		Perceptual-Psychological	Physical		
Meetings and Social Relations	Social relations are very important for every person, and this need is possible in a particular body based on his/her culture, and what is in his/her mind. According to their culture and their feeling of need, people choose places to meet and establish social relations.	*	*	Naqsh-e Jahan Square in Isfahan	Naqsh Jahan Square, Isfahan (Shahabinejad et al. 2016, 56) Naqsh-e Jahan Square is a ground for the occurrence of a wide variety of social, economic, political, governmental, cultural, etc. activities. This wide variety causes the presence of people of different classes (Ibid, 56).
				Shahrdari Square in Rasht	Shahrdari Square in Rasht (Habibi and Berenji 2016, 329) Shahrdari Square in Rasht is one of the public arenas in this city, which has been considered a place for the social life of citizens from the beginning of its construction (Ibid, 329)

People's customs form their relational hierarchy, which emerges as a result of the repetition of behaviors and lifestyles. This principle forms the way people communicate with society and perform social activities. Special public ceremonies are a manifestation of social activity derived from the customs of that region. Therefore, considering the multiplicity of places for holding ceremonies, Table 7 presents two outstanding examples of Iranian architecture (Uraman Takht in Kurdistan and the small square in front of the City Theater's building).

Table 7. The Relationship between the Cultural Component of Customs and People's Mental Images

Cultural Component	Description	Factors of Mental Images		Case Study	Analysis and Images
		Perceptual-Psychological	Physical		
Customs	People's customs form their relational hierarchy, which emerges as a result of the repetition of behaviors and lifestyles. The way people communicate with society and perform social activities is created according to the repetition of behaviors.	*		Uraman Takht in Kurdistan	Pir Shalyar ceremony in Oraman Takht (Molanaei and Soleimani 2016, 123) The existence of the special ceremony "Pir Shalyar", which is held twice every year, shows the rich culture and customs of that region (Ibid, 123).

Cultural Component	Description	Factors of Mental Images		Case Study	Analysis and Images
		Perceptual-Psychological	physical		
Customs	People's customs form their relational hierarchy, which emerges as a result of the repetition of behaviors and lifestyles. The way people communicate with society and perform social activities is created according to the repetition of behaviors.	*		The small square in front of the City Theater's building	The small square in front of the City theater's building (Esmaeilian and Ranjbar 2013, 192) This small square acts as one of the liveliest public spaces in Tehran. In this place, due to the presence of public customs, some activities have converted it into a cultural place (Ibid, 192)

Indigenous and religious beliefs and opinions determine to what extent and how people control realms. In traditional houses, actions are formed in three different physical areas: open, semi-open, and closed. The solitude, hierarchy of houses, and daily activities of people are different depending on their indigenous and religious beliefs and opinions in these three areas (Parvardinezhad et al. 2021, 191). Therefore, considering the multiplicity of outstanding traditional houses, Table 8 shows two examples of these traditional houses (Borujerdi House in Kashan and Forough al-Molk House in Shiraz) to clearly show the impact of people's beliefs on these houses.

Table 8. The Relationship between the Cultural Component of Indigenous and Religious Beliefs and Opinions and People's Mental Images

Cultural Component	Description	Factors of Mental Images		Case Study	Analysis and Images
		Perceptual-Psychological	Physical		
Indigenous and Religious Beliefs	Indigenous and religious beliefs and opinions determine to what extent and how people control realms. Based on the beliefs that are part of the culture, the place of living and gathering can be controlled and designed.	*	*	Borujerdi House in Kashan	Borujerdi House in Kashan (Parvardinezhad et al. 2021, 192) The religious beliefs of the people of Kashan, along with their foresight to control unfavorable climatic conditions, have caused more introversion, in addition to directing the openings towards the yard, (Ibid, 197).
				Forough al-Molk House in Shiraz	Forough al-Molk House in Shiraz (Parvardinezhad et al. 2021, 192) Preservation of personal privacy and solitude is usually seen in the hierarchy of open, semi-open, and closed spaces, due to the toleration of the people of Shiraz (Ibid, 191).

8. CONCLUSION

Examining the research questions and the investigations on the relationship between the components of culture and factors of mental images from Rapaport's perspective, it can be clearly concluded that each of the components of culture plays a significant role in the formation of people's mental images and their effects on each of the factors (physical or perceptual and psychological) can also be effective in the formation the environment. Figure 12 briefly shows the cycle of the relationship between culture and people's mental images and their role in the formation of the built environment.
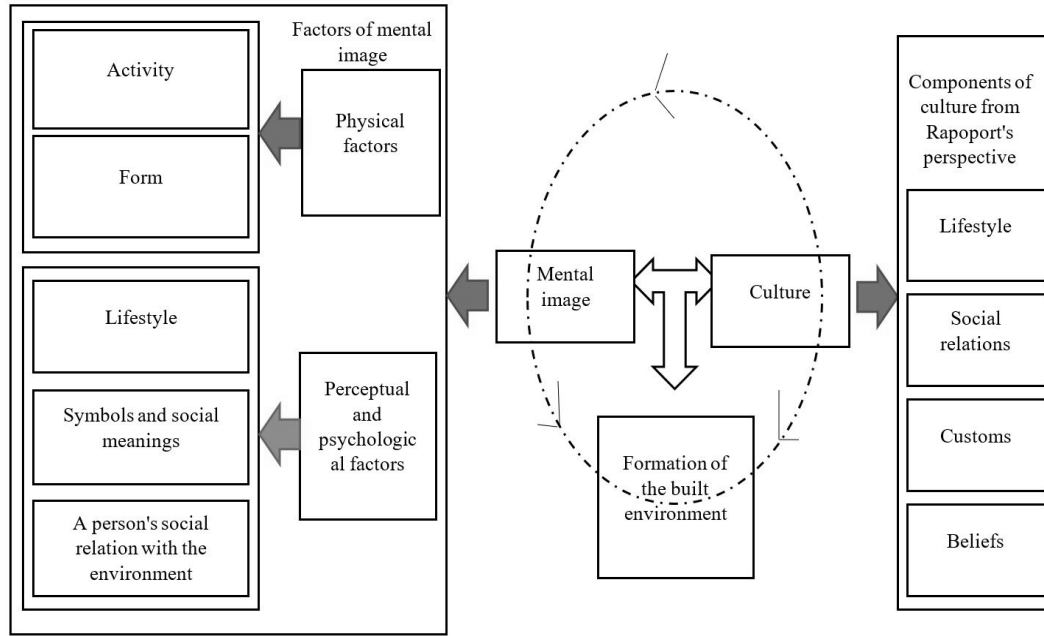

Fig. 12. The Cycle of the Relationship between Culture and People's Mental Images and their Role in the Formation of the Built Environment

Also, according to the detailed examination of each component of culture from Rapaport's viewpoint, the following results were obtained and it became clear that each of them, including the physical and perceptual-psychological factors of the mental image, can affect people's minds. Figure 13 shows this relationship clearly.

1. Regarding the cultural component of lifestyle, examining case studies (the Chahar-Soffeh pattern of Mola Abdollah House and the houses in Masuleh village) shows that the component of lifestyle influences the body and architecture of people's place of residence, and shapes the form of the houses due to the environment-behavior interaction. Therefore, it affects the factors of mental images and can be a part of the factors of mental images.

2. Regarding the cultural component of meetings and social relations, examining case studies (Naqsh-e Jahan Square in Isfahan, and Shahrdari Square in Rasht) shows that people's choice of a place to establish social relations comes from their culture and mental patterns, and the types of public places provide this opportunity for them. Therefore, the component of meetings and social relations can be a part of the physical and perceptual-psychological factors of mental images and influences people's mental images.

3. Regarding the cultural component of customs, examining case studies (holding ceremonies and cultural activities in Uraman, Kurdistan, and the small square in front of the City Theater in Tehran) shows that customs are formed as a result of the repetition of behaviors and form their relational hierarchy. Therefore, it greatly affects people's mental patterns and can be a part of the perceptual-psychological factors of mental images.

4. Regarding indigenous and religious beliefs, examining case studies (Borujerdi House in Kashan and Forough al-Molk House in Shiraz) shows that beliefs and opinions influence the formation of the body of people's place of residence. Because they determine to what extent and how people control realms. For this reason, this component can affect the physical factors of mental images. Since this component is embedded in people's minds over time, it also affects the perceptual-psychological factors of mental images.
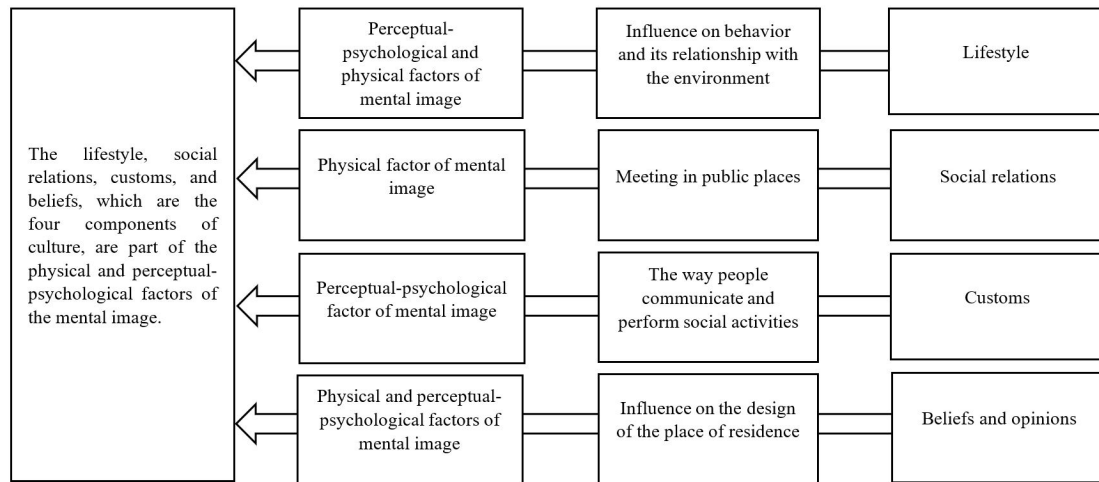
Fig. 13. The Relationship between the four Layers of Culture and the Factors of Mental Images

Therefore, according to the results of the present study, culture from Rappaport's perspective not only influences the mental images created in people's minds, but cultural components, including lifestyle, social relations, customs, and beliefs, are part of physical and perceptual-psychological factors of mental images. The mental images created in people's minds create ideals based on which people shape their environment. Therefore, this effectiveness of culture from Rapaport's perspective affects the formation of the environment.

According to the relevant studies, the influence of mental images on the formation of tall buildings has not been investigated, and this topic can be a suggestion for future research.

ENDNOTE

1. These three modes are the basic questions of EBS.

Shafipour Yourdshahi, P. et al.

REFERENCES

– Carmona, Mathew. 2006. *Public Places, Urban Spaces*. Oxford: Architectural press. https://www.routledge.com/Public-Places-Urban-Spaces/Carmona-Carmona-Heath-Oc-Tiesdell/p/book/9781856178273

– Esmaeilian, Sahar, and Ehsan Ranjbar. 2013. Finding Main Effective Factors of Creating and Transition of Collective Memory in Urban Public Spaces, Case Study: Tehran: Tajrish Square, Baharestan Square, and Plaza City Theater. *Armanshahr* 11(2): 181-194. http://www.armanshahrjournal.com/article_33474.html [in Persian]

– Gholami, Gholamhossein, and Mojtaba Kavian. 2017. Typology of Chahar-Soffeh pattern in historical houses of Iran. *Athar* 77: 31-48. https://www.magiran.com/paper/1802299 [in Persian]

– Habibi, Seyed Mohsen, and Seyed Kahroba Seyed Berenji. 2016. Investigation of the Relation between Memorability and Social Collaboration in Regeneration of Urban Identity, Case Study: Shahrdari Square in Rasht. *Armanshahr*. 17: 329-342. http://www.armanshahrjournal.com/article_44636.html [in Persian]

– Hackmann, Ann, and Emily A. Holmes. 2004. Reflecting on imagery: A clinical perspective and overview of the special issue of memory on mental imagery and memory in psychopathology. *Memory* 12(4): 389-402. https://doi.org/10.108009658210444000133/

– Heidari, Ali Akbar, and Parisa Mohammad Hoseini. 2014. Reading a Home, An Application of Rapaport᾽s viewpoint in Iranian Architecture Studies. *International journal of Architecture and Urban Development*. 1(4): 63-76. https://dorl.net/dor/20.1001.1.22287396.2014.4.1.7.0

– Horowitz, M. J. 1970. *Image formation and cognition*. Appleton Century Crofts press. https://openlibrary.org/books/OL4912857M/Image_formation_and_cognition.

– Joudakiazizi, Asadollah, Seyed Rasool Mousavihaji, and Reza Mehrafarin. 2014. Chaharsofeh Pattern Typology at Iranian Architecture and Its Evolution. *Journal of Researches in Islamic Architecture*. 5: 64-87. http://jria.iust.ac.ir/article-1111--fa.html [in Persian]

– Kamrani, Avide, and Mustafa Behzadfar. 2016. The Meaning of Place, A Constant or Changing Quality? Lynch, Rapoport and Semiotics Viewpoints. *Space Ontology* 5(2): 43-47 https://dorl.net/dor/20.1001.1.23456450.2016.5.2.5.1

– Kapogiannis, Georgios, Terence Fernando, and Ahmed Mohammed Alkhard. 2021. Impact of proactive behavior antecedents on construction project managers' performance. *Construction Innovation* 21(4): 423-431. https://doi.org/10.1108/CI-020029-2020-

– Kilpatrick, Franklin. 1954. Recent Experiments in Perception. *New York Academy of Science* 8(16): 420-425.

– Labibzadeh, Razieh, Mahdi Hamzenejad, Abdolhamid Noghrekar, and Mohammad Ali Khanmohammadi. 2015. Islamic Review of Rapoport's Environmental Behavior Study (EBS) for Home Space Design Model and Analyzing its Efficacy in Design. *Architectural and Urban Planning* 17(2): 21-41. 10.30480/AUP.2016.319 [in Persian]

– Lynch, Kevin. 1960. *The Image of The City*. The MIT Press. https://www.miguelangelmartinez.net/IMG/pdf/1960_Kevin_Lynch_The_Image_of_The_City_book.pdf

– Lynch, Kevin. 2016. *The image of the city*. Translated by Dr. Manouchehr Mozayeni. Tehran: Tehran University Press. https://www.gisoom.com/book/11279194 [in Persian]

– Malakavarzamani, Atieh, Jaleh Sabernejad, and Hassanali Pourmand. 2020. Development of a Model of Perceptual Persistence in Architecture Using the Grounded Theory Method. *Armanshahr* 30(2): 183-199. https://doi.org/10.22034/aaud.2019.120536.1466 [in Persian]

– Molanaei, Salaheddin, and Sara Soleimani. 2015. Recognition of Iranian Identity Symbols of Traditional Vernacular Architecture in the West Part of Iran, Case Study: Uraman. *Armanshahr* 17(9): 115-127. http://www.armanshahrjournal.com/artic [in Persian]

– Motalebi, Qasem. 2006. Recognition of the ratio of form and function in architecture. *Honar-ha-ye-Ziba* 25(1): 45-56. https://journals.ut.ac.ir/article_12308.html [in Persian]

– Norberg schulz, Christian. 1988. *Architecture: meaning and place*. Rizzoli: First American Edition. https://www.amazon.com/Architecture-Meaning-Selected-Architectural-documents/dp/0847808475

– Norberg Schulz, Christian. 2003. *Architecture: Meaning and Place*. Translated by Neda Nowrozborazjani. Tehran: Jan-e Jahan Publications. https://www.gisoom.com/book/11100144 [in Persian]

– Pakzad, Jahanshah, and Hamideh Bozorg. 2016. *Alphabet of environmental psychology for designers*. Tehran: Armanshahr Publications. https://www.gisoom.com/book/11142590 [in Persian]

– Parvardinezhad, Samira, Mehdi Hamzehnejad, Narges Dehghan, and Mansoureh Kianersi. 2021. A Comparative Study of the influence of Culture and Climate in the Form of Qajar Houses in Shiraz and Kashan. *Journal of Architectural Thought* 10: 182-201. 10.30479/doi: AT.2020.10953.1230 [in Persian]

– Pourmand, Hassan Ali, Hadi Mahmoudinezhad, and Mohammad Ranjazmay Azari. 2010. The meaning of place and subjective imagination in urban studies from the perspective of Christian Schulz in the phenomenological approach. *Journal of Urban Management* (26): 79-92. https://www.sid.ir/paper/92175/fa [in Persian]

– Rapaport, Amos. 1969. *House form and Culture*. New Jersey: Prentice-Hall, Englewood cliffs. https://www.amazon.com/House-Form-Culture-Amos-Rapoport/dp/0133956733

– Rapoport Amos. 1977. *Human aspects of urban form: Towards a man- environment approach to urban form and design*. Oxford: Pergamon Press. https://www.amazon.com/Human-Aspects-Urban-Form-Environment/dp/0080242804

– Rapaport, Amos. 1980. *Neighborhood Heterogeneity or Homogeneity, Georgy Publishing Company*. Switzerland: Saphorin. https://www.epfl.ch/labs/lasur/wp-content/uploads/201805//RAPOPORT.pdf

– Rapaport, Amos. 1983. Development, Culture Change and Supportive Design. *Habitat international* 7(5): 249-268. https://doi.org/10.10160-90076(83)3975-0197/

– Rapaport, Amos. 1990. *Vernacular architecture in 21 century, vernacular design as a model system*. New York: Basic Book. www.jstor.org/stable/43030481

– Rapaport, Amos. 2003. *Culture, Architecture, and Design*. London: Locke Science. https://www.amazon.com/Culture-Architecture-Design-Amos-Rapoport/dp/0974673609

– Rapoport, Amos. 2003. *Cultural origins of architecture*. Translated by Sadaf Al-e Rasool. Afra Bank. Farhangestan-e Honar. 56-97. http://ensani.ir/fa/article/226265 [in Persian]

– Rapaport, Amos. 2005. *The Meaning of the Built environment: A Nonverbal Communication Approach*. Trans. By F. Habibi. Tehran: Urban Planning and Processing Co. https://pdfcoffee.com/rapoport-amos-the-meaning-of-the-built-environment-a-nonverbal-communication-approach-pdf-free.html

– Rapaport, Amos. 2006. Archaeology and Environment-Behavior Studies. American Anthropological Association 16: 59-70. https://doi.org/10.1525/ap3a.2006.16.1.59

– Rapaport, Amos. 2008. Some Further Thoughts on Culture and Environment. *Architectural Research* 2(1): 16-39. https://www.archnet.org/publications/5100

– Rapoport, Amos. 2012. *Culture, architecture, and design*. Translated by Maria Barzegar. Majid Yousof Niapasha. Sari: Shaflin Publications. https://www.gisoom.com/book/1832099 [in Persian]

– Rasoulpour, Hazhir, Iraj Etessam, and Arsalan Tahmasebi. 2020. Evaluation of the Effect of the Relationship between Building Form and Street on the Human Behavioral Patterns in the Urban Physical Spaces; Case Study: Valiasr Street, Tehran. *Armanshahr* 32(4): 113-130. https://www.sid.ir/paper/376336/fa [in Persian]

– Rastjoo, Seyede Solmaz, and Mohammad Reza Bemanian. 2019. The Typology of the Spatial Structure of the Contemporary Iranian Homes Relying on Confidentiality and Hierarchy Case study: homes between the 1970s to 2000s in Tehran. *Honar-ha-ye-Ziba* 2: 49-58. https://doi.org/10.22059/jfaup.2020.271330.672179 [in Persian]

– Relph, Edward. 1976. *Place and Placelessness*. London: Pion. http://dx.doi.org/10.41359781446213742/.n5

– Ronen, Tammie. 2011. *The positive power of imagery: Harnessing client imagination in CBT and related therapies*. Europ: Wiley. https://www.wiley.com/enus/The+Positive+Power+of+Imagery%3A+Harnessing+Client+Imagination+in+CBT+and+Related+Therapies-p-9781119996194

– Shahabinejad, Ali, Reza Abouei, Mahmoud Qalenouei, and Seyed Mohammad Emami. 2014. Formation and historical transformation of Naqsh-e Jahan Square, Isfahan. *Knowledge of Restoration and Cultural Heritage*. 3: 45-64. http://www.aui.ac.ir/index.php/fa/rsch [in Persian]

– Shakouri, Reza, and Aida Namdar. 2018. Study of the Mechanism for Organizing the Environment with the Minimum Physical Elements (Through the Lens of Amos Rapoport Theory: Organization of Environment) Case study: Qashqai Nomad's Dwelling. *Bagh-e Nazar* 15: 5-16. https://www.doi.org /10.22034/bagh.2018.80610 [in Persian]

– Stepien, Mateusz, and Michal Dudak. 2021. The courtroom as a built environment: On the usefulness of Amos Rapoport's theoretical framework. *Oñati Socio-Legal Series* 11(6): 141-152. https://doi.org/10.35295/osls.iisl/00001230-0000-0000-

– Stupa, Luise. 2009. *Imagery and the threatened self, Perspectives on mental imagery and the self in cognitive therapy*. Routledge: behavioral and cognitive therapy. https://www.routledge.com/Imagery-and-the-Threatened-Self-Perspectives-on-Mental-Imagery-and-the/Stopa/p/book/9780415494304

– Vermaghani, Hosna, Hasan Soltanzadeh, and Seyed Ataallah Tahaei. 2018. A Comparative Study of the Influence of Culture on Entrances of Qajar Houses in Gilan and Mazandaran. *Armanshahr* 25(2): 237. http://www.armanshahrjournal.com/article_85112.html [in Persian]

– Zarghami, Esmaeil, Ali Khaki, and Seyede Ashraf al-Sadat. 2015. A comparative study of sustainable architecture and compliance with the vernacular architecture of traditional houses in Iranian-Islamic cities. *Architecture and Sustainable Urbanism* 1: 15-30. https://journals.sru.ac.ir/article_697.html [in Persian]