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Original Research Article

Analyzing the Role of Landscape Components in Resident–Housing Compatibility:

A Comparative Study of Courtyard Houses from the Second Pahlavi Period and Contemporary Housing in Tehran

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Abstract | The rapid transition from traditional courtyard houses to contemporary apartments has diminished residents' connection with light, water, vegetation, the sky, and open space, creating a gap between their perceptual needs and the quality of the residential environment. However, the ways in which this landscape transformation affects resident dwelling compatibility have remained unclear. This study aimed to explain the role of residential landscape as an experience arising from the interaction between the physical–natural characteristics of the environment and residents' perception, meaning-making, and ways of living, and to examine its relationship with resident–dwelling compatibility in two housing types: courtyard houses from the Second Pahlavi period and contemporary housing in Tehran. The research adopted a qualitative and comparative approach, and data were collected through semi-structured interviews with three groups of residents. The data were analyzed using thematic analysis. The findings showed that the effects of physical natural elements on compatibility are not direct; rather, the ways in which residents perceive, use, and attribute meaning to these elements contribute to the formation of a sense of fit or mismatch with the environment. In the narratives of residents of traditional houses from the Second Pahlavi period, multidirectional natural light, courtyards, water, vegetation, and direct connection with the sky were integrated into the structure of everyday life and enhanced feelings of openness, tranquility, and place attachment. In contemporary apartment cases, limitations in natural light, views, and open space reduced sensory interactions and created conditions for perceptual and behavioral incompatibility, prompting residents to adopt compensatory strategies such as adding plants, rearranging furniture, and using balconies. Comparison of the narratives of the three study groups showed that landscape qualities in traditional houses constituted an integral part of spatial organization, whereas in contemporary apartments they were often experienced in limited, mediated, and compensatory forms. Accordingly, the reintegration of natural light, open and semi-open spaces, vegetation, and appropriate views into housing design is proposed as a strategy for reducing the gap between residents' psychological needs and the constraints of contemporary apartments.

Keywords | *Person–environment fit, Perceptual quality, Residential compatibility, Lived experience, Residential landscape*

Introduction| The reduction of residential landscape components such as natural light, vegetation, water, views of the sky, and open space in contemporary housing has created a gap between residents' needs and the quality of the residential environment. This issue becomes more evident when traditional houses are compared with contemporary apartments, because in traditional houses, courtyards and semi-open spaces constituted an integral part of everyday life, whereas in today's apartments these qualities have been reduced to windows, balconies, or limited elements. Therefore, the issue addressed in this article is not merely the decline of natural elements, but rather the weakening of the relationship between the residential landscape, the experience of dwelling, and residents' compatibility with the residential environment. Housing, beyond its physical

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form, is an arena for social interactions, the reproduction of cultural patterns, and residents' perceptual–psychological experiences. Accordingly, residential quality depends on the fit between the environment, users' needs, and their ways of living.

This relationship has been explained through the concept of "Person–Environment Fit," which refers to the congruence between environmental conditions and individuals' functional and perceptual needs (Oswald et al., 2005). Urbanization processes and the mass production of housing in Tehran have generated typologies that are not necessarily compatible with cultural patterns of dwelling. This mismatch is manifested in reduced access to natural light, views, and connections with nature. Residents, in turn, attempt to restore balance by changing the functions of spaces, reinterpreting them, and intervening in their residential environments (Lee et al., 2026); a process that may be facilitated or constrained by the perceptual qualities of the environment. Accordingly, landscape components at the scale of the dwelling were defined as natural light, vegetation, water, views of green spaces, and contact with the outdoors. Evidence has shown that contact with nature contributes to psychological comfort, stress reduction, and residential satisfaction (Gong, 2023), while visual exposure to nature or quasi-natural elements can improve cognitive performance and the quality of environmental experience (DeLauer et al., 2022). The presence of biophilic elements in residential buildings has also been associated with a sense of belonging, reduced stress, and enhanced subjective well-being (Bianchi et al., 2024). Furthermore, biophilic elements at both neighborhood and dwelling-unit scales can strengthen residential satisfaction and pro-environmental behaviors (Mousapour, 2024). Nevertheless, most studies have focused on health or satisfaction and have examined landscape components separately. Consequently, it remains less clear how landscape components, as mediating factors, shape environmental perception and, across different housing typologies, strengthen or weaken residents' adaptation to the residential environment.

In Iranian residential architecture, domestic open space has historically constituted part of the way of life and of residents' relationship with nature. In cities and villages, some daily activities are carried out in courtyards or semi-open spaces, and the presence of natural light, vegetation, and views enhances the desirability of these spaces. Studies have shown that the presence of natural elements and nature-related qualities increases residents' satisfaction and improves the architectural quality of housing (Shaliha et al., 2023). However, the integration of these findings with the Person–Environment Fit framework and the comparison between traditional and contemporary housing has not yet been systematically addressed. Traditional houses featured central courtyards, multidirectional natural lighting, and continuous connections with nature, whereas contemporary housing has developed predominantly in the form of dense apartment buildings with limited access to open spaces. In traditional houses, the courtyard, iwan, basement, and rooftop enabled residents to experience the sky, sunlight, wind, and seasonal changes. Thus, engagement with nature was not merely visual, but was directly experienced through variations in light, wind, rain, snow, and thermal conditions.

In the book "Three elements of Persian Landscape, A study on the Persian architecture and urban space", Mansouri & Javadi (2018) considers the Iranian landscape to be the outcome of a continuous interaction among humans, nature, and culture a lived experience in which the boundary between inside and outside becomes blurred and space is transformed into a manifestation of natural order and cultural meanings. As he states: "The combination of the three elements of water, trees, and the chahartaq constitutes the identity of Iranian space. The desirability, sanctity, and beauty of constructed space in Iran depend on the presence of these three elements". In contrast, within industrial and mechanized environments, the experience of nature often becomes limited and mediated, which may lead to spatial introversion, greater reliance on mechanical systems, and deprivation from direct and unmediated experiences of nature.

Therefore, the principal research gap can be identified as the lack of qualitative and empirical studies that comparatively investigate the role of "landscape components" as mediating factors in resident–dwelling compatibility across traditional and contemporary housing typologies. Focusing on the city of Tehran, this article seeks to demonstrate how the presence or absence of natural elements in residential environments influences the lived experience of dwelling and residents' process of adapting to residential space. In this regard, landscape is analyzed not merely as an aesthetic or environmental variable, but as a mediator in the formation of Person–Environment Fit and residential compatibility.

Given the broad historical and typological diversity of housing in Tehran, the present study does not seek to generalize its findings to all examples of traditional houses and contemporary housing. The scope of the study is limited to two specific types: courtyard houses from the Second Pahlavi period and contemporary residential units in the city of Tehran. This delimitation makes it possible to focus the comparison on residents' experiences of two specific physical and residential conditions and to interpret the observed differences as analytical patterns within the framework of the cases under study.

Accordingly, the main research question is as follows: How does the residential landscape, through the interaction

between environmental characteristics and residents' perceptual–meaningful experiences, influence Person–Environment Fit and residential compatibility in the studied examples of courtyard houses from the Second Pahlavi period and contemporary housing in the city of Tehran?

Literature Review

The literature review was conducted to determine the position of landscape components within the experience of dwelling and to clarify the distinctive contribution of the present comparative study. Related studies were classified into four thematic areas. The most important foundational sources and recent studies corresponding to these areas are presented in Table 1 in order to clarify the relationship between previous findings and the research problem addressed in this article.

The first thematic area emphasizes that the form and spatial organization of the house are not merely products of climate and technology, but also reflect residents' culture, ways of living, and behavioral patterns. Rapoport (1969), by explaining the relationship between house form and culture, provided a basis for understanding differences among residential patterns. Housing satisfaction has been defined as residents' evaluation of the extent to which the residential environment responds to their needs. Amérigo & Aragonés (1997) emphasized the perceptual nature of this evaluation, while Oswald et al. (2006) conceptualized it through the dimensions of satisfaction, usability, meaning, and controllability. Accordingly, compatibility with the dwelling is shaped through the interaction between the environment and residents' expectations.The second thematic area concerns the role of landscape and contact with nature in the experience of dwelling. Classical evidence has shown that views of nature can facilitate reductions in psychological stress (Ulrich, 1984; Kaplan & Kaplan, 1989). Kellert et al. (2008) identified light, vegetation, water, natural materials, and views as components of biophilic design. Gong (2023) examined the multisensory experience of nature, while Bianchi et al. (2024) showed that indoor greenery and a sense of control are associated with reduced stress and enhanced place attachment. Das et al. (2025) demonstrated that the quality of window views depends on window orientation, unit location, and residents' perceptions. Miao et al. (2026) identified preferences for natural elements, place perception, and behavioral activities as pathways through which biophilic qualities influence well-being. Asadpour et al. (2024) regarded landscape as comprising both objective and subjective dimensions and showed that neglecting users' meanings and perceptions weakens the relationship between people and landscape. Jam (2024) conceptualized landscape elements across sensory, spatial, functional, socio-cultural, and ecological dimensions and explained their influence on attachment and emotional experience. Collectively, these studies indicate that landscape quality is shaped through perception, meaning-making, and multisensory experience.

The third thematic area considers open space and the quality of the surrounding environment as integral components of housing quality. Kellekci & Berkö (2006) and Berkoz et al. (2009) showed that residents' satisfaction cannot be explained solely by the internal characteristics of the dwelling unit, as views, open space, and neighborhood quality are also determining factors. Scannell & Gifford (2010) explained the relationship between physical and natural elements, memory, emotion, and place attachment. Ghorbani et al. (2024) likewise showed that spatial organization, possible activities, water and vegetation, legibility, and cultural memory influence the perception of residential open spaces. These findings are particularly important in the Iranian context, where courtyards, iwans, and semi-open spaces have historically accommodated everyday activities; their removal therefore represents not only a reduction in usable domestic space, but also a restriction of ways of using the house and experiencing its landscape.The fourth thematic area concerns studies of the Iranian house, in which the courtyard has been introduced as an organizing element mediating the relationship between interior and exterior spaces. Memarian & Brown (2003) identified the central courtyard as a mechanism for providing privacy, natural light, ventilation, and contact with nature, while Yazdanpanah & Walker (2010) explained the role of light, shade, water, and vegetation in supporting its sustainability. Haeri Mazandarani (2009) examined the relationship among house, culture, and nature, and Tahbaz et al. (2016) investigated the perceptual role of natural light. Pallasmaa (2005) interpreted the residential landscape through light, sound, smell, touch, and environmental change. Abedi & Ziabakhsh (2025) showed that the traditional house, beyond its physical performance, represented cultural values, social relationships, and meanings associated with ways of living, whereas the decline of these qualities in contemporary housing has created a gap between the built environment and residents' needs.

Overall, the literature indicates that previous studies have primarily examined the effects of natural elements on health, well-being, satisfaction, or attachment, while the relationship between landscape components, environmental perception, Person–Environment Fit, and adaptation strategies has received comparatively less attention. Most studies have also examined traditional houses and contemporary housing separately, and comparative analyses of residents' experiences across these

Table 1. Summary of previous studies. Source: Compiled by the authors based on the references listed in the table.

Researcher/Year	Title	Results and Findings
Miao et al. (2026)	Enhancing psychological well-being in high-density residential areas through biophilic environment: Pathways and factors	Biophilic components enhance the psychological well-being of residents in high-density residential complexes by strengthening their connection with nature and their perception of place.
Abedi & Ziabakhsh (2026)	The evolution of the concept of home in Iranian architecture: From traditional settlements to contemporary housing	The comparison between traditional houses and contemporary housing shows that the Iranian house, beyond meeting physical requirements, embodied cultural, social, and symbolic values. Reinterpreting these qualities can contribute to greater compatibility between contemporary housing and residents' needs and ways of living.
Das et al. (2025)	Greenery from apartments: Quantifying and comparing views with residents' perceptions	Residents' perception of green views is influenced not only by the actual amount of greenery, but also by the location of the dwelling unit, window orientation, and perceptual factors.
Bianchi et al. (2024)	Nature, buildings, and humans: Residents' perceptions of well-being in permanent supportive housing	Biophilic features, such as indoor greenery, can help reduce stress and strengthen the sense of belonging through multisensory stimulation and an enhanced sense of control.
Ghorbani et al. (2024)	Functional characteristics of open spaces in residential complexes and their role in design	The quality of residential open spaces is shaped by the interaction of physical, functional, and symbolic dimensions. Spatial organization and activities influence residents' perceptions, while natural elements, legibility, cultural memory, and emotional–social meanings contribute to the formation of environmental identity and desirability.
Gong (2023)	Healthy dwelling: The perspective of biophilic design in the design of the living space	For high-density urban living environments, a biophilic model based on the five senses is proposed, demonstrating that residential interior design can contribute to residents' health and well-being through light, vegetation, sound, smell, and touch.
Yazdanpanah & Walker (2010)	The traditional Iranian courtyard: An enduring example of design for sustainability	The courtyard of the Iranian house is a sustainable example of climatic and cultural design that enhances quality of life through light, shade, water, vegetation, and natural ventilation.
Kellert et al. (2008)	*Biophilic design: The theory, science, and practice of bringing buildings to life*	Biophilic design emphasizes restoring the connection between humans and nature within the built environment. Natural elements such as light, vegetation, water, natural materials, and views of nature can enhance the quality of the residential experience.
Kellekci & Berkoz (2006)	Mass housing: User satisfaction in housing and its environment in Istanbul, Turkey	Both the quality of the dwelling unit and the quality of the surrounding environment influence residents' satisfaction. Therefore, the assessment of residential satisfaction should not be limited to the interior of the dwelling unit; the broader environment, views, open spaces, and neighborhood quality should also be considered.
Oswald et al. (2006)	Homeward bound: Introducing a four-domain model of perceived housing in very old age	It introduces a model of housing perception comprising four domains: housing satisfaction, usability, the meaning of home, and controllability.
Memarian & Brown (2003)	Climate, culture, and religion: Aspects of the traditional courtyard house in Iran	The central courtyard of the Iranian house developed in relation to climate, culture, and religion and is not merely an open space; rather, it functions as a mechanism for organizing dwelling, privacy, natural light, ventilation, and connection with nature.
Amérigo & Aragonés (1997)	A theoretical and methodological approach to the study of residential satisfaction	Residential satisfaction is the outcome of an individual's subjective evaluation of their relationship with the residential environment and can reflect the quality of the environment, the dwelling, the neighborhood, and the resident's perceptual needs.
Rapoport (1969)	*House form and culture*	House form is not merely the product of climate or technology; rather, it reflects residents' culture, way of life, social structure, and behavioral patterns.

two housing types in Tehran remain limited. The present article addresses this gap by comparatively analyzing landscape components and their implications for resident–dwelling compatibility.

Theoretical Framework of the Study

• Housing as a behavioral perceptual environment

In contemporary approaches to architecture and environment–behavior studies, housing is no longer regarded merely as a physical object or a building product; rather, it is understood as an environment for lived experience, social interaction, and the reproduction of cultural patterns. This paradigm shift reflects a transition from a purely functionalist perspective toward a human-centered approach that defines spatial quality in relation to users' perception, culture, and behavior. From this perspective, residential quality results from the interaction between the physical characteristics of the environment and residents' lived experiences and therefore cannot be assessed solely through physical indicators.

The house reflects human culture and ways of living, and its spatial organization acquires meaning in relation to everyday behaviors. In his classic work House Form and Culture, Rapoport (1969) emphasizes that the form of houses, rather than being merely the product of climatic or technical factors, reflects cultural systems, behavioral patterns, and social structures, and is directly shaped by ways of life, family relationships, and cultural values. Accordingly, the house should be analyzed as a "behavioral–cultural environment," and the comparison of different housing patterns should likewise be extended to the level of human experience.

Environment–behavior theories emphasize the role of the built environment in shaping everyday experience. Individuals' perceptions of the quality of the residential environment influence residential satisfaction, place attachment, and well-being, and such evaluations are formed on the basis of physical, social, and perceptual factors (Amérigo & Aragonés, 1997). Landscape components can likewise modify these perceptions.

"Everyday life in housing" also constitutes an important dimension in the analysis of residential environments. In addition to physical dimensions, the quality of the living environment depends on residents' perceptions of the environment's supportive capacity and the opportunities it provides for carrying out daily activities. High-quality residential environments can enhance psychological security, place attachment, and subjective well-being (Wallenius, 1999). Features such as natural light, views, and spatial quality also influence residential satisfaction, sense of belonging, and place identity (Latreille et al., 2024). Studies on biophilic design further indicate that the presence of natural elements in residential environments can improve environmental perception and residents' well-being (Zhong et al., 2024). Therefore, the experience of light, views, and open space is of particular importance in the analysis of dwelling.

Housing should thus be regarded as a behavioral–perceptual environment in which physical characteristics, residents' perceptions, and cultural patterns interact to shape residential quality. This perspective constitutes the theoretical basis of the present article and provides a framework for examining the role of landscape components in resident–dwelling compatibility. The comparison between the two housing patterns therefore focuses on differences in sensory experience and the responsiveness of the environment to residents' needs.

• Residential adaptation & satisfaction

"Residential compatibility" is a central concept for explaining the relationship between residents and the residential environment. It refers to a dynamic process through which residents, when confronted with the physical, social, and cultural conditions of their environment, adopt strategies to achieve greater fit and satisfaction. Housing is not merely a physical space, but also a setting in which individual needs interact with environmental characteristics. Theories of residential satisfaction are based on the assumption that housing quality is considered desirable when there is a perceived congruence between residents' expectations and environmental conditions (Mohit, 2014). Residential satisfaction likewise results from residents' subjective evaluations of their living environment and is influenced by spatial quality, environmental amenities, social relationships, and place identity (Amérigo & Aragonés, 1997).

Theories of residential adaptation focus on the strategies residents employ to reduce the gap between their needs and environmental conditions. These strategies may include physical modifications, redefining the functions of rooms, reusing spaces, or changing behavioral patterns. Residential adaptation is, in essence, a process through which individuals seek to establish a balance between their needs and the constraints of the dwelling. Housing adjustment theory similarly proposes that when an imbalance exists between needs and environmental conditions, residents either modify the environment or adjust their behavior and expectations in order to achieve satisfaction (Morris & Winter, 1978). This perspective indicates that users play an active role in shaping the experience of dwelling.

Contemporary studies have shown that residential adaptation is closely related to environmental quality and residents' perceptions of space. Factors such as natural light, view quality, and access to open space can influence residential satisfaction and perceived comfort (Kellekci & Berkoz, 2006). In addition, the "lived experience of dwelling" constitutes part of the adaptation

process, and everyday patterns of space use, together with individuals' perceptions of environmental quality, contribute to the formation of satisfaction (Clapham, 2002). In environment–behavior studies, residential adaptation is also linked to the concept of Person–Environment Fit, meaning that satisfaction and comfort are achieved when the environment is capable of meeting residents' functional and psychological needs (Oswald et al., 2005). A lack of landscape components may likewise activate compensatory strategies.

In contemporary residential architecture, diminished spatial qualities or environmental constraints may reduce residential satisfaction; nevertheless, residents attempt to compensate for these deficiencies by adopting adaptive strategies (Jansen, 2014). Residential compatibility and housing satisfaction are therefore two interrelated concepts that emerge through the interaction between environmental characteristics and residents' needs. Satisfaction refers to the evaluation of the environment, whereas adaptation refers to the process of reducing mismatch. This distinction forms part of the theoretical foundation of the present article and enables an examination of the role of landscape components in the process of resident–dwelling compatibility.

• Housing adjustment theory

"Housing Adjustment" theory is one of the fundamental frameworks in environment–behavior and housing studies, emphasizing the reciprocal relationship between the characteristics of the built environment and users' needs, abilities, and preferences. According to this theory, the quality of environmental experience and individuals' psychological well-being increase when environmental conditions are congruent with individual needs. An environment is considered satisfactory when it is capable of meeting users' functional, perceptual, and social expectations. Housing Adjustment Theory is therefore one of the factors influencing residential satisfaction and the quality of lived experience (Edwards et al., 1998) and helps explain differences in residents' perceptions.

Housing Adjustment Theory was initially developed within environmental and organizational psychology and was subsequently applied to housing and architectural studies. The theory is based on the assumption that individuals and environments are in continuous interaction and that the quality of this interaction affects their well-being and functioning. When the environment meets individuals' needs, a state of balance and compatibility is achieved; however, when a mismatch occurs, individuals tend to modify either the environment or their own behavior in order to restore equilibrium (Kristof-Brown et al., 2005). Therefore, the experience of dwelling results from the interaction between environmental and individual characteristics and cannot be explained solely through physical indicators.

- Theoretical definition of housing adjustment theory

In its classical definition, Housing Adjustment Theory refers to the degree of congruence between individual and environmental characteristics. This congruence may occur at functional, perceptual, and cultural levels. At the functional level, fit is achieved when the environment meets users' practical needs; at the perceptual level, it occurs when the environment corresponds with users' mental and sensory expectations; and at the cultural level, it emerges when the environment is compatible with individuals' values and patterns of living (Caplan, 1987). A courtyard or balcony can simultaneously respond to these needs.

In housing studies, this theory has been applied to explain the relationship between users and the residential environment. Residents tend to experience greater satisfaction when a degree of congruence exists between environmental characteristics and their needs. When such congruence is absent, individuals seek strategies to restore balance (Oswald et al., 2005). These strategies may include spatial modifications, behavioral changes, or even residential relocation. In the present article, landscape components influence the level of perceived Person–Environment Fit.

- Perceptual and cultural fit in housing

In residential architecture, Person–Environment Fit is not limited merely to the functional responsiveness of space; perceptual and cultural dimensions also play an important role in shaping the experience of dwelling. Individuals' perceptions of the residential environment, including feelings of comfort, safety, and place attachment, can influence the level of residential satisfaction (Jansen, 2014). These perceptions depend on factors such as natural light, views, spatial organization, and the sensory qualities of the environment. Therefore, functional responsiveness does not necessarily imply perceptual fit.

From a cultural perspective, the house reflects patterns of living and social values. In many cases, contemporary housing may not correspond with users' cultural patterns and ways of living, and this mismatch can reduce residential satisfaction (Rapoport, 1969). The use of open space and the keeping of plants may constitute part of these patterns. Under such conditions, residents attempt to establish a balance between their needs and environmental conditions through spatial or behavioral modifications.

Environment–behavior studies indicate that environmental perception and the sensory qualities of space play an important role in shaping Person–Environment Fit. Features such as natural light, views of green spaces, and spatial quality can enhance feelings of comfort and satisfaction and contribute to perceptual fit between the individual and the environment (Kellekci & Berkoz, 2006). These findings suggest that environmental qualities contribute to the experience of dwelling and the development of place

attachment. Therefore, landscape constitutes part of the mechanism through which perceptual fit is formed.

- The relationship of person–environment fit with residential satisfaction and adaptation

Person–Environment Fit theory is closely related to residential satisfaction and housing adaptation. Satisfaction tends to be higher when individuals' needs are congruent with environmental conditions; when a mismatch occurs, residents adopt adaptive strategies in an attempt to restore balance (Amérigo & Aragonés, 1997). These strategies may include rearranging furniture or altering the functions of spaces, adding natural elements, and making more effective use of available environmental resources. Landscape quality also plays a role in residents' assessment of fit and in their responses to the residential environment.

The more effectively the environment meets residents' functional, perceptual, and cultural needs, the greater their sense of belonging, satisfaction, and residential compatibility. Conversely, when such needs are not adequately met, individuals attempt to restore balance by modifying either the environment or their own behavior (Oswald et al., 2005). In contemporary housing, spatial constraints or reduced access to natural elements may diminish Person–Environment Fit and, consequently, residential satisfaction (Jansen, 2014). Overall, this theory provides a framework for analyzing the relationship between the quality of the residential environment and residents' experiences and serves as the basis for examining the role of landscape components in resident–dwelling fit.

- The concept of residential landscape: Physical, perceptual, and semantic dimensions

At the scale of housing, landscape is not merely an image viewed through a window or a decorative element intended to enhance the aesthetic quality of space; rather, it constitutes part of residents' everyday experience. In this article, residential landscape is understood not as a collection of physical or natural elements, but as the quality of the relationship between residents and their residential environment -a relationship formed through the simultaneous interaction of objective–physical, sensory–perceptual, subjective–semantic, behavioral, and sociocultural dimensions. Accordingly, light, water, vegetation, courtyards, balconies, semi-open spaces, and views are not themselves landscape; rather, they are settings and stimuli that, through residents' experience and interpretation, can acquire landscape qualities. The meanings attributed to these elements by residents, as well as memory and association, sense of belonging, preference, expectation, sense of control, patterns of everyday use, and cultural values, all constitute aspects of the landscape experience. Therefore, in this article, residential landscape is defined as the outcome of the relationship among "environmental characteristics," "residents' perception and meaning-making," and "ways of dwelling."

Within the literature employed in this article, at least four levels can be distinguished for understanding residential landscape. The first is the physical–natural level, which concerns spatial organization, light, water, vegetation, open space, and the relationship between interior and exterior. The second is the sensory–perceptual level, encompassing visual, auditory, olfactory, and tactile experiences, as well as perceptions of openness, brightness, and environmental quality. The third is the subjective–semantic level, which includes memory, attachment, identity, preference, expectation, and the meanings attributed to the home. The fourth is the behavioral–cultural level, which concerns patterns of space use, everyday activities, privacy, social relationships, and cultural patterns of dwelling. Within this framework, landscape is not an independent object, but rather the outcome of the relationships among these levels as experienced by residents in the residential environment. This definition is consistent with Mansouri & Javadi's (2018) conception of landscape as the outcome of the relationship among humans, nature, and culture; Pallasmaa's (2005) emphasis on the multisensory nature of environmental experience; Rapoport's (1969) perspective on the relationship between residential space, culture, and way of life; and studies of place attachment and place meaning.

- Definition of landscape at the residential scale

In classical approaches, landscape was primarily defined at the scale of nature, gardens, or cities; however, environment–behavior studies have extended this concept to the home. At the residential scale, landscape refers to the qualities that organize residents' sensory and perceptual relationships with both interior and exterior environments. Views of the sky or green spaces, the manner in which natural light enters the dwelling, the presence of vegetation and water, and opportunities to use open space all contribute to shaping environmental experience. Views of nature and the presence of natural elements can enhance residents' subjective well-being and satisfaction (Ulrich, 1984). Biophilic design similarly demonstrates that environments incorporating natural light, vegetation, water, and views of nature can promote a greater sense of calm and comfort (Kellert et al., 2008). In traditional houses, these elements were integrated into the spatial organization, whereas in contemporary dwelling units they have often been reduced to limited or add-on elements.

- Sensory and perceptual qualities of landscape

Residential landscape is a multisensory experience and is not limited to the visual perception of scenery. The quality of light, air movement, the sound of water or the surrounding environment, the smell of vegetation and soil, temperature differences between shade and sunlight, and the ability to sense seasonal changes all contribute to the perception

of the home. In traditional housing, courtyards, iwans, multidirectional windows, and transitional spaces enabled direct exposure to these changes and shaped the temporal rhythms of dwelling. In contemporary apartments, such experiences occur through windows, on balconies, or by means of indoor plants. The perception of natural light, view quality, the presence of vegetation, and connection with open space influences feelings of comfort, safety, and satisfaction (ibid.). The difference between the two housing patterns lies in the intensity, continuity, and diversity of these experiences.

Natural qualities influence the experience of dwelling. Contact with nature reduces psychological stress and enhances relaxation. Viewing nature through a window can also reduce mental fatigue and support attention restoration (Kaplan & Kaplan, 1989). In residential environments, access to natural light and green space has been associated with satisfaction and place attachment (Kellekci & Berkoz, 2006). However, the mere formal presence of such elements is not sufficient; for example, a balcony that remains unused because of inadequate dimensions, noise pollution, or the absence of a desirable view does not generate meaningful landscape quality. A landscape component becomes effective when it is perceptible, usable, appropriate for everyday activities, and integrated into daily life.

- Landscape as part of the dwelling experience

Landscape is part of the way of dwelling because it influences the use of space and the performance of everyday activities. The quality of natural light, views, the presence of nature, and connection with open space can alter residents' feelings of comfort and satisfaction (Gifford, 2007). In courtyard houses, open space serves as a setting for rest, conversation, play, plant care, household activities, and the experience of seasonal change. In contemporary apartments, these activities have either been transferred indoors or restricted to balconies and windows. Landscape therefore constitutes an active component of the way of life and helps regulate the relationship between residents and the home.

Landscape quality affects the extent to which residents are able to adapt to their environment. Environments containing natural elements can enhance satisfaction and place attachment, whereas their absence may diminish the quality of the dwelling experience (Jansen, 2014). Residents of contemporary apartments often compensate for limited landscape qualities by adding plants, rearranging furniture to receive more natural light, opening up views, making more active use of balconies, or choosing lighter curtains. These actions indicate that landscape represents a perceptual and behavioral need rather than merely an aesthetic preference. In traditional houses, this need was addressed through the spatial structure itself; in contemporary housing, by contrast, meeting this need often depends on individual intervention. This difference provides a basis for comparing levels of fit and types of adaptation strategies across the two housing types.

Overall, residential landscape is a multidimensional concept encompassing natural elements, sensory qualities, the usability of open space, and residents' perceptions. These components are experienced in relation to space, activity, and culture. In traditional houses, landscape is integrated into both the physical form and the way of life; in contemporary housing, by contrast, its experience is more limited, selective, and at times compensatory. This understanding provides a basis for analyzing the role of landscape components in environmental perception, Person–Environment Fit, and resident–dwelling compatibility. It also allows landscape quality to be assessed in terms of the presence of elements, their usability, the continuity of contact, and the meanings they hold for residents.

• Biophilic approach in residential architecture

In this article, the biophilic approach is considered one of the explanatory frameworks for the natural and sensory dimensions of residential landscape and is not treated as synonymous with the concept of landscape. Residential landscape is a broader concept that, in addition to contact with nature, also encompasses perception, meaning, memory, activity, culture, and the resident's relationship with the environment.

- Biophilia theory in architecture

The concept of biophilia is based on the human tendency to connect with nature and explains the importance of incorporating nature into the built environment. Within this approach, connection with nature is not merely a decorative preference, but constitutes part of users' perceptual and psychological needs. Natural light, vegetation, water, views of green spaces, ventilation, and natural environmental variations enhance the quality of experience and influence comfort and satisfaction (Kellert et al., 2008). In housing, this approach is particularly significant because the home is a place of everyday residence, and the quality of daily contact with nature can be reflected in residents' feelings of calm, control, and attachment. In this article, biophilia provides a framework for understanding the effects of landscape components on the dwelling experience.

- Effects of natural elements on well-being and satisfaction

Contact with natural elements can enhance the quality of the residential experience. Viewing nature through a window has been associated with positive psychological outcomes (Ulrich, 1984), while natural environments can contribute to the restoration of cognitive resources and the reduction of mental fatigue (Kaplan & Kaplan, 1989). At the scale of the dwelling, adequate natural light, desirable views, and semi-open spaces can support the better organization of everyday activities. Access to these elements is associated with

positive environmental perceptions, residential satisfaction, and a sense of belonging (Kellekci & Berkoz, 2006).

The present analysis distinguishes between the physical presence of an element and the quality of the experience it provides; a window without a view, an unusable balcony, or a plant without sufficient light does not adequately meet landscape-related needs. The effects of these elements therefore depend on their spatial integration and actual accessibility.

- Nature in residential environments

The integration of nature into residential environments can occur either directly or indirectly. Natural light and ventilation, vegetation, water, courtyards, semi-open spaces, and views of natural scenery represent direct forms of connection with nature, whereas natural materials, nature-inspired patterns, and images of nature constitute indirect forms. The presence of these components can create positive experiences and contribute to the formation of place attachment and place identity (Gifford, 2007). In comparing the two housing patterns, direct connection is of greater importance because traditional houses enabled residents to be physically present, move, and carry out activities in open spaces, whereas contemporary apartments tend to limit the experience of nature to visual contact or to the addition of natural elements within interior spaces.

Residential environments characterized by natural qualities can enhance residential satisfaction by reducing stress (Jansen, 2014). Nature is therefore not merely an aesthetic element, but also part of the mechanism of residential adaptation. When the environment provides adequate natural light, desirable views, vegetation, and opportunities to use open space, the need for compensatory interventions is reduced. Conversely, limitations in these components may prompt residents to rearrange furniture, rely on artificial lighting, add plants, or redefine the use of balconies. The degree to which nature is integrated into the structure of the dwelling creates a distinction between adaptation based on the intrinsic qualities of space and adaptation based on compensatory strategies. This approach provides the theoretical basis for incorporating nature into the conceptual model of the present article.

• The transformation of traditional Iranian housing into Contemporary housing and changes in landscape Qualities

In the traditional Iranian house, the relationship among nature, climate, and spatial organization was embedded in the logic of dwelling. Pirnia identifies the central courtyard, controlled natural lighting, and the presence of natural elements as fundamental principles of traditional residential architecture (Pirnia, 2009). In this pattern, the courtyard was not merely an empty space; rather, it served as the organizing core for circulation, views, natural light, ventilation, and everyday activities. The presence of the sky, vegetation, and water at the heart of the house brought nature directly into the dwelling and created continuity among enclosed, semi-open, and open spaces. This structure enabled residents to select appropriate spaces according to the time of day, season, temperature, and type of activity, thereby benefiting from the environmental diversity of the house. Accordingly, in the present analysis, the biophilic approach is evaluated through residents' actual experiences, and the merely symbolic presence of nature is not considered sufficient.

Natural light, gardens, and connections with open space contributed to feelings of calm and attachment among residents of traditional houses (Daeipour, 2014). The central courtyard, iwan, and semi-open spaces strengthened the relationship between interior and exterior and enriched the sensory quality of the environment (Memarian & Brown, 2003). Water and vegetation, in addition to their climatic functions, also contributed to comfort, well-being, and a sense of attachment (Edwards et al., 2004; Rapoport, 2005). The importance of this pattern is not merely historical; in Iranian cities and villages, open spaces have served as settings for activity, rest, and family interaction. The desire for open spaces with landscape qualities can therefore be understood as the continuation of a functional, cultural, and perceptual need.

In contemporary urban housing, particularly in high-density apartment buildings, direct access to nature has declined. Land constraints, increased density, and mass-housing production patterns have reduced courtyards and semi-open spaces, while in some cases natural light and views have also been diminished. Access to natural light and green space is important to housing quality, and their reduction can weaken residential satisfaction and place attachment (Kellekci & Berkoz, 2006; Flamaki, 2011). Balconies in many dwelling units are small, lack privacy, or are used for storage and therefore cannot fulfill the role of habitable open space. To compensate for these deficiencies, residents use indoor plants, rearrange furniture, rely on artificial lighting, or make limited use of balconies.

Comparison of the two housing patterns shows that the primary difference does not lie in the "absolute presence or absence of nature," but rather in the manner in which landscape components are integrated, accessed, and used. In traditional houses, natural light, courtyards, water, vegetation, and semi-open spaces organized the experience of dwelling; in contemporary housing, these qualities are more limited or depend on residents' interventions. This transformation should therefore be analyzed in terms of its consequences for everyday experience, perceptions of openness, opportunities for choice, and the fit between the environment and residents' needs. This comparison forms

the basis for the empirical investigation undertaken in the present article.

• Landscape as a mediating factor in residential adaptation

The literature on residential adaptation and satisfaction explains the relationship between residents and their environment, while the biophilic literature examines the effects of natural elements on well-being and environmental experience. Despite their overlap, the connection between these two bodies of literature has rarely been conceptualized as a process. In this article, landscape is regarded as a mediating factor: housing characteristics are experienced through landscape components at sensory and perceptual levels; these experiences subsequently shape residents' assessment of Person–Environment Fit and influence either satisfaction or the activation of compensatory strategies. This distinction also indicates that open space becomes effective only when it provides privacy, accessibility, appropriate views, and opportunities for residents' everyday use.

Residents' evaluation of their dwelling depends on the congruence between their needs and environmental characteristics, and this congruence influences satisfaction and attachment (Amérigo & Aragonés, 1997). Under unfavorable conditions, residents attempt to restore balance by changing the function of spaces, rearranging them, or reusing them in different ways. Housing adjustment theory similarly considers environmental or behavioral modification as individuals' response to mismatch (Morris & Winter, 1978). Landscape components can function both as sources of fit and as objects of intervention: adequate natural light and usable open spaces can meet residents' needs, whereas their absence may necessitate furniture rearrangement, the addition of plants, or alternative uses of balconies.

Biophilic research has shown that natural elements can enhance relaxation and concentration and reduce psychological stress; even viewing nature through a window can have positive effects (Ulrich, 1984). The theory of restorative environments likewise emphasizes the role of contact with nature in restoring cognitive resources (Kaplan & Kaplan, 1989). These findings are related to the present investigation of how nature affects residents' evaluation of their homes. Landscape quality can strengthen feelings of openness, comfort, and control, whereas its absence may generate feelings of confinement or dissatisfaction. Landscape thus acts as a mediator that transforms physical environmental characteristics into perceptual experience and subsequently into behavioral responses.

The perception of natural light, views, and spatial quality influences comfort and satisfaction (Kellekci & Berkoz, 2006), and within the Person–Environment Fit framework, a positive residential experience emerges when housing characteristics correspond with residents' needs (Oswald et al., 2005). In traditional houses, direct and unmediated contact with nature can satisfy perceptual, functional, and cultural needs. In contemporary apartments, the increasingly mediated nature of this contact may lead residents to adjust their expectations or adopt compensatory behaviors. A reduction in conscious engagement with nature may also weaken perceptual sensitivity and the cultural dimensions of dwelling, thereby creating a disconnection between everyday life and the residential environment.

Accordingly, the analytical pathway of this article consists of four levels: landscape components, environmental perception and well-being, Person–Environment Fit, and residential adaptation. Natural light, views, vegetation, courtyards, balconies, and semi-open spaces shape sensory experience; this experience influences feelings of calm, openness, control, and attachment; residents then evaluate the degree to which the dwelling corresponds with their needs; and when the level of fit declines, adaptation strategies are activated. This pathway transforms landscape from an aesthetic variable into an explanatory link in the relationship between residents and their dwellings.

• Conceptual model of the study

The conceptual model of the article was developed to link the two domains of residential adaptation and biophilic design. In this model, the physical environment influences residents' experiences through landscape qualities, with landscape functioning as a mediating variable. A distinction is made between the "physical–natural settings of landscape" and the "landscape experience." Natural light, views, water, vegetation, courtyards, balconies, and semi-open spaces are environmental characteristics that provide the conditions for experiencing landscape; however, landscape emerges only when these characteristics are perceived, experienced, interpreted, and incorporated into residents' everyday lives. This formulation makes it possible to compare traditional houses and contemporary housing not merely in terms of building form or age, but on the basis of the quality of contact with nature, spatial perception, and residents' responses. The relationships among the components of the model are illustrated in Fig. 1. Within this sequence, residents' previous experiences alter the basis of comparison and may intensify their perception of either fit or mismatch.

At the first level of the model, landscape components include natural light, views of green spaces and the sky, the presence of vegetation and water, courtyards, balconies, and semi-open spaces. These components constitute the primary stimuli of environmental experience and shape residential quality through perception. The role of environmental characteristics in spatial perception

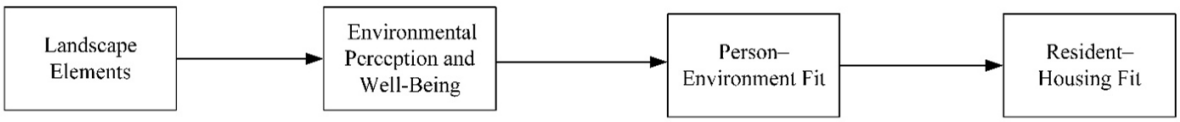


Fig. 1. Conceptual model of the article. Source: Authors.

and residential satisfaction has been demonstrated in environment–behavior studies (Kellekci & Berkoz, 2006). In addition to the presence of these elements, the model also considers their usability, continuity, and intensity of experience, since an unusable element has only a limited effect.

The second level comprises environmental perception and well-being, including feelings of openness or enclosure, brightness, calm, comfort, control, and connection with the outdoors. This level indicates that physical qualities do not affect all residents in the same way, but acquire meaning through their experience and interpretation. At the third level, residents evaluate the degree of fit between the dwelling and their needs on the basis of their needs and previous experiences. Person–Environment Fit theory regards residential desirability as the result of congruence between users' expectations and environmental characteristics (Oswald et al., 2005).

At the final level is resident–dwelling compatibility. When perceived fit is high, satisfaction, attachment, and continued use of space are strengthened; however, reduced fit may lead to strategies such as rearranging furniture, adding plants, redefining spaces, using balconies differently, or adjusting expectations. Residential adaptation is the process of establishing a balance between residents' needs and the characteristics of space (Morris & Winter, 1978). In traditional houses, landscape qualities are integrated into the spatial structure, reducing the need for individual compensation; in contemporary housing, the limited and mediated nature of contact with nature may disrupt this sequence and increase compensatory interventions. This model provides the framework for the interviews and for comparing the two housing types. Moreover, directly relating the findings to the levels of the model makes it possible to connect the final conclusions to code frequencies and differences between the narratives of the two groups. This relationship is examined throughout the analysis.

Research Method

This article employed a qualitative–interpretive approach within a comparative study to examine the role of landscape components in resident–dwelling compatibility in traditional houses from the Second Pahlavi period and contemporary housing in Tehran. The aim was to explore residents' lived experiences and explain the mechanisms through which natural elements and landscape qualities influence environmental perception, well-being, Person–Environment Fit, and ultimately residential adaptation. The theoretical foundation of the article was based on the literature on residential adaptation, Person–Environment Fit theory, and biophilic approaches in architecture. Landscape was considered not merely as a physical characteristic, but as a mediating factor in the dwelling experience and as a basis for comparing housing patterns.

The data were collected through semi-structured interviews. Purposive sampling was employed, and participants were selected from residents of the two housing types traditional courtyard houses from the Second Pahlavi period and contemporary apartment units taking into account diversity in spatial typology, access to natural elements, and length of residence. The interview themes included the dwelling experience, satisfaction and comfort, place attachment, perceptions of natural light and landscape, the presence or absence of open space and natural elements, and strategies for modifying or reinterpreting space in order to achieve compatibility. Data collection continued until theoretical saturation was reached, such that several consecutive interviews yielded no new codes or themes for the analytical structure. To reveal the subjective and semantic dimensions of landscape, participants were also asked about the meanings that different spaces of the home held for them, memories associated with courtyards, windows, balconies, and open spaces, feelings of attachment or alienation, environmental preferences, expectations of an ideal home, and differences between their current dwelling experience and previous residential experiences.

Data were analyzed using Braun & Clarke's (2006, 2019) reflexive thematic analysis. The analytical process included familiarization with the data, coding at the level of meaning units, clustering related codes, reviewing themes, and developing the final analytical narrative. Coding was conducted without imposing the theoretical framework a priori, and themes were subsequently developed on the basis of recurring patterns in participants' lived experiences. In the final stage, the extracted themes were organized according to the four levels of the article's conceptual model -landscape components, environmental perception and well-being, Person–Environment Fit, and residential adaptation- and compared across the two housing patterns. To operationalize the concept of landscape, residential landscape was first conceptualized on the basis of the theoretical framework in four dimensions: physical–natural, sensory–perceptual, subjective–semantic, and behavioral–cultural. These dimensions were used as sensitizing concepts rather than as a closed list of predetermined codes. Initial coding was conducted openly

at the level of meaning units, and all references made by participants to environmental characteristics, sensory experiences, emotions, memories, preferences, meanings, patterns of space use, and adaptation strategies were recorded. Related codes were then organized into analytical categories. Accordingly, natural light, open space, views, and other physical elements were not assumed a priori to be equivalent to "landscape"; rather, they were analyzed as settings through which landscape experience is formed in conjunction with perceptual and semantic dimensions.

• Study population and sample

The study population consisted of residents of two housing types in the city of Tehran. Sampling was purposive and stratified, and participants were selected according to criteria aligned with the theoretical objectives of the study. The main selection criteria included housing type, period of construction, the presence or absence of physical–natural settings associated with landscape experience including courtyards, natural light, views, green spaces, semi-open spaces, and balconies length of residence, and relative diversity in participants' age and household characteristics. To define the temporal scope of the study more precisely and enable comparison between two specific residential types, the sample was limited to courtyard houses dating from the Second Pahlavi period and contemporary residential units in Tehran. In this study, the term "courtyard house from the Second Pahlavi period" refers to houses dating from 1941 to 1979 which, in the selected cases, were characterized primarily by courtyards, direct natural lighting, semi-open spaces, and a more direct connection between interior and exterior spaces. In contrast, "contemporary housing" refers to the contemporary apartment units examined in Tehran. Accordingly, the two groups represent two specific housing types within the framework of the study sample, and the findings do not claim to encompass all housing types or all periods of housing transformation in Tehran.

Geographically, the study was limited to selected cases located within the city of Tehran. Given the qualitative nature of the research, the aim of sampling was not to statistically generalize the findings to the entire housing stock of Tehran, but rather to achieve diversity in residential experiences and to enable an analytical comparison between the two housing types under study.

Within these two housing types, participants were organized into three groups:

1. Residents of courtyard houses from the Second Pahlavi period: This group consisted of individuals who, at the time of the study, were living in courtyard houses dating from the Second Pahlavi period. This group enabled the examination of dwelling experiences in houses where the relationship between interior spaces, courtyards, semi-open spaces, and natural elements was more strongly embedded in the spatial organization.

2. Residents of contemporary housing with previous experience of living in courtyard houses from the Second Pahlavi period: This group consisted of residents of contemporary apartment units who had previously lived in the courtyard houses considered in the study. Their inclusion made it possible to examine the role of previous residential experience and the mental comparison between the two housing patterns in evaluating the current residential environment.

3. Residents of contemporary housing without previous experience of living in courtyard houses from the Second Pahlavi period: This group consisted of individuals who had no direct experience of living in the courtyard houses examined in the study. Analysis of this group made it possible to investigate the perception and evaluation of contemporary housing among residents whose subjective criteria were not directly based on prior experience of living in this type of courtyard house.

This classification enabled the simultaneous examination of the role of residential environmental characteristics and residents' previous experiences in the perception and meaning-making of landscape, the assessment of Person–Environment Fit, and the formation of residential adaptation strategies. Sample size was determined according to the logic of qualitative research and data saturation; data collection therefore continued until new interviews no longer contributed additional themes or analytical categories to the emerging structure of the findings.

Research Findings

The thematic analysis of interviews with residents of the studied courtyard houses from the Second Pahlavi period and contemporary housing in Tehran revealed four levels of meaning: landscape components, environmental perception and well-being, Person–Environment Fit, and resident–dwelling compatibility. Comparison of the three groups showed that the dwelling experience is influenced not merely by the presence or absence of natural elements and physical characteristics, but also by how residents perceive and attribute meaning to the environment, their previous residential experiences, and the ways in which they respond to spatial constraints and affordances.

• Landscape components: Physical–natural stimuli and settings of landscape experience

At the level of the physical–natural stimuli and settings of landscape experience, residents of the studied traditional houses from the Second Pahlavi period described natural light, the central courtyard, the iwan, views of the sky, and green spaces as continuous components of everyday life; the courtyard functioned as a place for presence, activity, and contact with fresh air. In contrast, participants living in the studied contemporary apartment examples referred to the enclosed nature of space, one-sided natural

lighting, and the restriction of contact with the outdoors to windows, balconies, or a few potted plants. As shown in Table 2, "natural light and lighting quality" had the highest frequency, with 147 meaning units. This was followed by "open and semi-open spaces" with 44 units and "views and visual landscape" with 34 units, while "acoustics and environmental quietness" had the lowest frequency, with 11 units. This distribution indicates that natural light and open space constituted the main criteria for comparing the two housing types.

• Environmental perception and well-being: Sensory, perceptual, and subjective dimensions of landscape experience

At the level of environmental perception and well-being, landscape qualities were translated into residents' emotional and bodily responses. Residents of traditional houses from the Second Pahlavi period described the spaces as "open," "bright," and "lively," associating natural light, airflow, and views to the outside with calmness and comfort. In contrast, some residents of contemporary apartments referred to a sense of spatial heaviness, insufficient natural light, feelings of enclosure, and weak connections with the outdoors. In Table 3, "emotional–bodily states" accounted for the largest share, with 115 meaning units, followed by "perception of openness/enclosure and control," with 48 units. The lower frequencies of "connection with nature/the outdoors" and "brightness/darkness" indicate that these qualities were often expressed indirectly through feelings of calmness, pressure, or openness.

• Components of person–environment fit

At the level of Person–Environment Fit, previous residential experience played a decisive role. Residents of traditional houses, as well as those with prior experience of living in such houses, evaluated their current housing against criteria such as the presence of a courtyard, natural light, views, and continuity between interior and exterior spaces; when these qualities were absent, they experienced a stronger sense of mismatch. In contrast, residents without previous experience of traditional houses tended to regard existing conditions as "normal" and referred to the process of becoming accustomed to them. As shown in Table 4, the "comparative lens and expectation criteria" had the highest frequency, with 89 meaning units, followed by "sense of congruence/fit" with 66 units and "sense of

Table 2. Landscape components: Physical–natural stimuli and settings of landscape experience. Source: Authors.

Category	Subcategory	Number of Codes
L1_Landscape_Components	Natural Light and Lighting Quality	147
L1_Landscape_Components	Open and Semi-Open Spaces	44
L1_Landscape_Components	View and Visual Landscape	34
L1_Landscape_Components	Other/Unspecified	33
L1_Landscape_Components	Acoustics and Environmental Quietness	11

Table 3. Environmental perception and well-being: Sensory, perceptual, and subjective dimensions of landscape experience. Source: Authors.

Category	Subcategory	Number of Codes
L2_Environmental_Perception_and_Well-Being	Affective–Bodily States	115
L2_Environmental_Perception_and_Well-Being	Perception of Openness/Enclosure and Control	48
L2_Environmental_Perception_and_Well-Being	Perception of Connection with Nature/Outdoors	6
L2_Environmental_Perception_and_Well-Being	Perception of Lightness/Darkness	4

Table 4. Analysis of person–environment fit components. Source: Authors.

Category	Subcategory	Number of Codes
L3_Person–Environment_Fit	Comparative Lens and Expected Criteria	89
L3_Person–Environment_Fit	Sense of Harmony/Fit	66
L3_Person–Environment_Fit	Sense of Conflict/Mismatch	45
L3_Person–Environment_Fit	Normalization/Adjustment of Expectations	7

conflict/mismatch" with 45 units. Therefore, the evaluation of housing quality depended both on spatial characteristics and on criteria shaped by previous residential experiences.

• Components of residential adaptation

At the level of residential adaptation, the difference between the two housing patterns became evident in the degree of intervention required. Residents of contemporary housing attempted to compensate for limited landscape qualities by adding plants, rearranging furniture to receive more natural light, making use of balconies, and redefining the functions of spaces. In traditional houses from the Second Pahlavi period, such interventions were reported less frequently because landscape components were already integrated into the primary spatial organization. As shown in Table 5, "compensatory strategies" accounted for the largest share, with 74 meaning units, followed by "spatial modifications" with 41 units. This finding indicates that residential adaptation in contemporary housing was more strongly characterized by compensatory responses.

• Summary of findings

Overall, the four extracted levels revealed a continuous relationship: landscape components shaped the sensory experience of space; this experience contributed to either well-being or discomfort; residents then evaluated the degree of fit between the dwelling and their needs; and when fit declined, adaptation strategies were activated. Comparison of the two housing types showed that in traditional houses, landscape constituted an integral part of the structure of dwelling, whereas in contemporary housing it was experienced in a more limited and compensatory manner.

Table 6 shows that the main difference between the two residential patterns did not lie merely in the presence or absence of natural elements, but rather in the position of these elements within the spatial organization and everyday life. In traditional houses, landscape formed part of the structure of the dwelling and provided a setting for everyday activities; in contemporary housing, by contrast, connection with landscape became more dependent on the quality of windows and balconies and on residents' individual interventions. This transformation also altered the mode of adaptation. In traditional houses, environmental characteristics inherently responded to some of residents' perceptual and cultural needs, whereas in contemporary housing residents relied more heavily on compensatory interventions to reduce the gap between their needs and spatial conditions. Accordingly, the comparative outcome of the article can be understood as a transition from "landscape as an organizer of dwelling" to "landscape as a limited and compensable quality."

Analysis and Discussion

The findings indicate that distinguishing between environmental elements and landscape experience is essential for interpreting the resident–dwelling relationship. Natural light, courtyards, semi-open spaces, views, and vegetation contribute to compatibility only when they are perceptible, usable, and meaningful to residents. From this perspective, the difference between traditional and contemporary cases does not merely concern the number or presence of natural elements, but rather how these elements are experienced, interpreted, and integrated into everyday life.

The findings showed that landscape components particularly natural light, open space, and views constituted the starting point for differences in dwelling experience across the housing patterns. As shown in Table 2, natural light had the highest frequency, with 147 meaning units, followed by open and semi-open spaces with 44 units and views and visual landscape with 34 units. In traditional houses, multidirectional natural light, courtyards, and iwans were integrated into the spatial organization and were associated with feelings of openness, calmness, and dynamism. In contemporary housing, by contrast, one-sided natural lighting, limited views, and underused balconies were associated with feelings of spatial heaviness and enclosure. Thus, the difference between the two housing types lay not only in the presence of natural elements, but also in the continuity of access to them and the possibility of using them.

These physical qualities were translated into emotional and bodily states. According to Table 3, emotional–bodily states, with 115 meaning units, and perceptions of openness or enclosure, with 48 units, were the dominant themes. Perceptual experience subsequently informed the evaluation of Person–Environment Fit. Table 4 showed that the "comparative lens and expectation criteria," with 89 meaning units, was more prominent than "sense of congruence/fit," with 66 units, and "sense of conflict/mismatch," with 45 units. Residents with previous

Table 5. Analysis of residential adaptation components. Source: Authors.

Category	Subcategory	Number of Codes
L4_Residential_Adaptation	Compensatory Strategies (plants/light/devices)	74
L4_Residential_Adaptation	Spatial Modifications	41
L4_Residential_Adaptation	Space Reuse/Reinterpretation	18
L4_Residential_Adaptation	Everyday Adaptive Behaviors	19

Table 6. Comparative summary of the dwelling experience in traditional houses from the Second Pahlavi Period and contemporary housing in Tehran. Source: Authors.

Dwelling Pattern	Physical–Natural Stimuli and Settings of Landscape Experience	Sensory, Perceptual, and Subjective Dimensions of Landscape Experience	Person–Environment Fit	Residential Adaptation
Traditional Houses from the Second Pahlavi Period	Natural elements were integrated into the spatial organization of the house, establishing a continuous connection between the interior, the courtyard, and the sky.	The multisensory experience of nature enhanced feelings of openness, dynamism, and tranquility.	The spatial structure of the house was more closely aligned with everyday activities and cultural patterns of dwelling.	Residential adaptation was achieved primarily through the environment's inherent responsiveness, with limited need for compensatory interventions.
Contemporary Housing	Connection with nature was often limited, fragmented, and dependent on windows, balconies, or added elements.	The quality of the experience depended on natural lighting, views, privacy, and the usability of open space; under unfavorable conditions, it created a sense of enclosure.	The degree of fit depended on the quality of the dwelling unit and residents' previous residential experiences; those with prior experience of traditional houses perceived a greater degree of mismatch.	Residents used furniture rearrangement, the addition of plants, and the redefinition of spaces to compensate for environmental deficiencies.
Comparative Result	In the compared cases, landscape in houses from the Second Pahlavi period was experienced more as an integral part of the spatial organization, whereas in contemporary apartment cases it was experienced more as a limited, mediated quality or one dependent on residents' interventions.	Reduced direct contact with nature has transformed the dwelling experience from a continuous, multisensory experience into a mediated one.	Traditional houses achieved fit primarily through the inherent affordances of the environment, whereas in contemporary housing, achieving fit has increasingly become the responsibility of the resident.	The main distinction was observed between "adaptation arising from environmental quality" and "residents' compensatory adaptation."

experience of traditional houses compared their current housing with the natural light, courtyard, and continuity between interior and exterior that they had experienced in the past, whereas those without such experience tended to regard existing conditions as normal.

The prominence of the "comparative lens and expectation criteria" indicates that landscape experience is not merely a product of the objective characteristics of the dwelling. Previous experience, memory, expectations, and residents' mental image of an ideal home influence how the current environment is interpreted. Accordingly, the same physical quality may be evaluated differently by different residents. Participants who had previously lived in courtyard houses did not describe courtyards, multidirectional natural light, and continuity between interior and exterior merely as physical elements; rather, they associated them with ways of living, memory, and criteria for evaluating the desirability of the home. This finding highlights the subjective–semantic dimension of landscape and demonstrates that resident–dwelling compatibility is shaped through the interaction between the physical environment and residents' experience and interpretation.

A decline in perceived fit activated adaptation strategies. As shown in Table 5, compensatory strategies, with 74 meaning units, and spatial modifications, with 41 units, had the highest frequencies. Adding plants, rearranging furniture, and using balconies in contemporary housing represented responses intended to compensate for limited landscape qualities, whereas such needs were reported less frequently in traditional houses. Consequently, the data supported the four-level pathway of the final model presented in Fig. 2: landscape components shaped environmental perception and well-being; perception informed the evaluation of fit; and reduced fit led to the readjustment of the environment.

Conclusion

The present article aimed to determine the role of landscape components in resident–dwelling compatibility and to compare the dwelling experience in traditional houses from the Second Pahlavi period and contemporary housing in Tehran. Analysis of semi-structured interviews with three groups showed that the differences between the two housing patterns stemmed from the ways in which natural light, open and semi-open spaces, views, vegetation, and connections with the outdoors were present, accessible, and used in everyday life. Landscape was identified as an active component of the organization of dwelling and as a

link between physical quality, environmental perception, Person–Environment Fit, and adaptive behaviors.

The results presented in Table 2 showed that "natural light and lighting quality," with 147 meaning units, was the most prominent landscape component, followed by open and semi-open spaces with 44 units and views and visual landscape with 34 units. Rather than functioning primarily as a decorative image, residential landscape was experienced through illumination, opportunities to spend time outdoors, and visual connections with the sky or greenery. The reflection of these qualities in Table 3 -where emotional–bodily states accounted for 115 meaning units and perceptions of openness, enclosure, and control accounted for 48 units showed that landscape components were translated into feelings of calmness and openness or, conversely, spatial enclosure and heaviness.

Comparison of the two housing types showed that in traditional houses from the Second Pahlavi period, courtyards, iwans, multidirectional natural light, and views of the sky and vegetation were integrated into the structure of the house and were accessible to residents without additional intervention. In contemporary housing, the same needs were addressed through limited windows, small balconies, or indoor plants. The frequency of 89 meaning units for the "comparative lens and expectation criteria" in Table 5 demonstrated that previous experience of living in a traditional house altered the criteria used to evaluate current housing. Consequently, participants with such experience perceived reductions in natural light, open space, and continuity between interior and exterior more strongly, whereas those without such experience tended to normalize existing conditions.

The practical consequences of this mismatch were evident in Table 5, where compensatory strategies, with 74 meaning units, and spatial modifications, with 41 units, had the highest frequencies. Adding plants, rearranging furniture to obtain more natural light, using balconies, and redefining spaces demonstrated that residents of contemporary apartments compensated for limited landscape qualities by modifying their behavior. Accordingly, adaptation in contemporary housing did not necessarily indicate environmental desirability; in some cases, it resulted from accepting constraints or from residents' interventions aimed at making the space more tolerable. In traditional houses, because landscape components were integrated into the spatial organization, the need for such interventions was reported less frequently.

This article demonstrated that landscape components strengthen resident–dwelling compatibility not merely through their physical presence, but through the transformation of natural light, views, vegetation, and open space into experiences that are everyday, accessible, and meaningful. Wherever this connection is disrupted, adaptation shifts from being supported by environmental quality toward compensation, intervention, and residents' tolerance of spatial limitations. The findings suggest that in the design and evaluation of comparable apartment housing in Tehran, the provision of effective natural light, connections with the sky and greenery, and usable open or semi-open spaces should be considered not merely as physical elements, but in terms of residents' opportunities

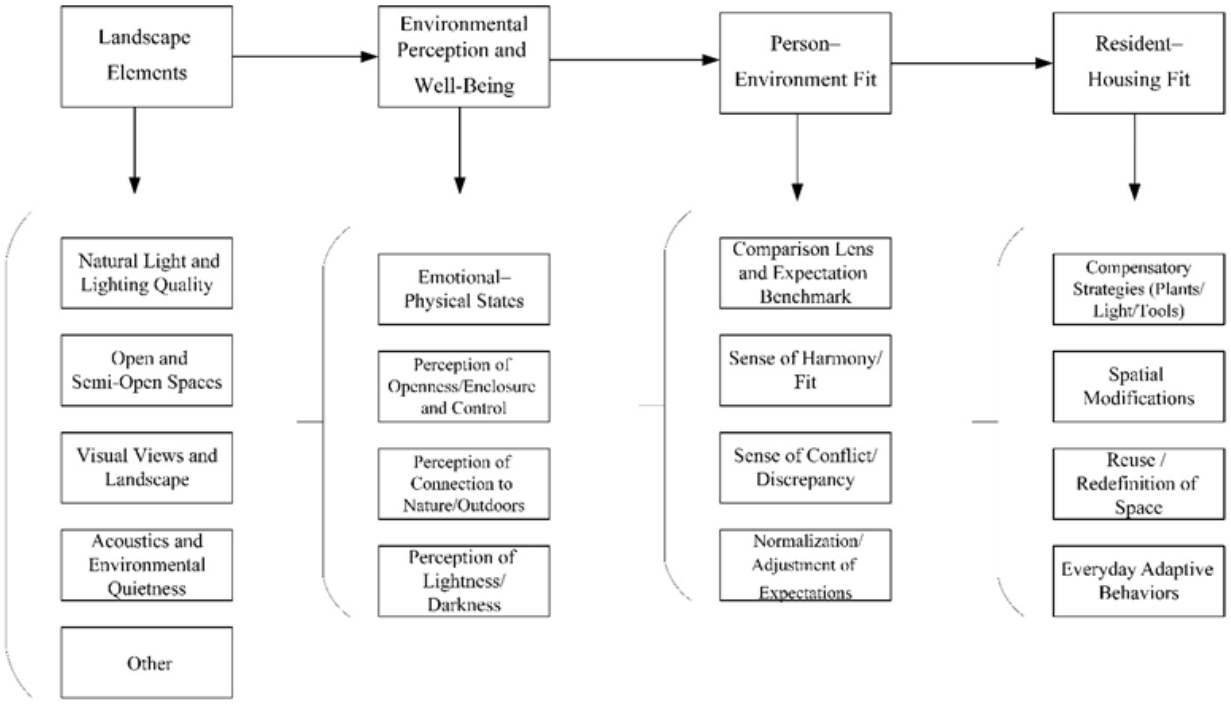


Fig. 2. Final conceptual model of the article. Source: Authors.

to experience, use, and attribute meaning to them. The internal organization of dwelling units should likewise enable residents to benefit from natural light, rearrange furniture, and maintain visual connections with the outdoors.

Given the qualitative nature of the study, the purposive sampling strategy, and the restriction of the sample to a specific geographical context and buildings dating from the Second Pahlavi period and the contemporary era, the findings are not intended to be statistically generalized to all traditional houses or contemporary apartments in Tehran. Their value lies in analytical generalization and in providing an interpretive mechanism for understanding the relationship among physical settings, landscape experience, Person–Environment Fit, and residential adaptation in comparable cases. The findings do not permit statistical generalization to all residents of Tehran, but they provide empirical criteria for housing design and evaluation. Future studies may examine these relationships using larger samples and through comparisons with other cities.

Declaration of No Conflict of Interest

The authors declare that they have no conflict of interest in conducting this research.

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