Original Research Article

The Effect of Sense of Community on the Formation of Behavior Settings
(Case Study: Ritual Public Spaces of Tabriz)*

Minou Gharehbaglou[1]**, Abbas Ghaffari[2], Raana Cenmar Asl[3]

1. Full Professor, Faculty of Architecture & Urbanism, Tabriz Islamic Art University, Iran.
2. Associate Professor, Faculty of Architecture & Urbanism, Tabriz Islamic Art University, Iran.
3. Ph.D. Candidate in Architecture. Faculty of Architecture & Urbanism, Tabriz Islamic Art University, Iran.

Abstract

Problem Statement: As environments with meaningful roles that are harmonic with the community, behavior settings are of great importance in enhancing the living environment quality. Additionally, a sense of community in individuals is a human and identity-related factor in the field of environmental design, which can be achieved through personal behavior, as well as the cultural state of a society to depict similar links and perceptions among individuals. Therefore, obtaining a clear meaning of an environment, on the one hand, and analyzing the sense of community indices in affecting the behavior-milieu synomorphy[1] , on the other hand, is the key to understanding a behavior setting and forming an environment harmonic with the community.

Research Objective: The present paper seeks to answer how behavior-milieu synomorphy in a behavior setting is influenced by a sense of community components, to identify and examine the role of a sense of community in forming behavior settings.

Research Method: This is a retroduction-based applied study. Consistent with this strategy, the theoretical model was achieved through data collection and literature review with a qualitative approach and reference to desk research; experiential analysis and explication were also conducted on the model during the field.

Conclusion: According to the research results, synomorphy in the ritual public spaces of Tabriz is effectively influenced by social and mental conditions components related to lifespan, upstream perception, and social issues. Additionally, environmental features and transpersonal factors (upstream perception and similar perception to others) act as criteria for determining the sense of community in public spaces. The extent of correlation between the sense of community and synomorphy forming behavior settings shows that the sense of community acts as a human presence catalyst and a basic element in increasing the factors affecting harmony and synomorphy in the environment. In other words, the sense of community has a significant effect on the formation of behavior settings.

Keywords: *Synomorphy, Human presence, Behavior-place, Upstream perception.*

The Scientific Journal of NAZAR research center (Nrc) for Art, Architecture & Urbanism

Introduction

Changes in the lifestyles of communities due to industrialization have led people to migrate to cities to find employment and social welfare, affecting social interactions and daily relationship patterns and leading to theories of loss of significant relationships by sociologists (Mahmoudi Farahani & Lozanovska, 2014, 224). Behavior setting is a concept used to analyze the social, psychological, and physical environment of children (Barker, 1968 & Wicker, 1979) and examine stable behavior patterns at a specific time and place (Meagher, 2019, 3). Today's urban structures are empty of social and cultural values, especially regarding interactions and attention to the beliefs and values of individuals in the community. Hence, analyzing behavior settings in the recognition of human behavior and formation of environments harmonic with the community is of great importance to enhance the living environment quality, which is formed through various factors, such as consistency between the behavior pattern and milieu of its occurrence. Hence, the key to understanding a behavior setting- as environments with significant roles, interactions, sense of belonging, and social identity- is achieving the clear meaning of an environment and indices affecting the behavior-milieu synomorphy. Additionally, a sense of community is a concept that has been mentioned as a result of theories of loss of significant relationships (Mahmoudi Farahani & Lozanovska, 2014, 224) for studies and measurements in the social field, and depicting the significance of a neighborhood-based life and the strength bonding among community members (Hahm, Breiter, Severt, Wang & Fjelstul, 2016, 152). Sense of community among individuals is mentioned as a fundamental and identity-related index in environmental designs in urban neighborhoods, which can be achieved through not only personal behavior but also the cultural condition of a community. Also, attention to culture, beliefs, and social values in the form of a sense of community can significantly affect the formation of human behaviors and the shaping of interpersonal relationships in different social

environments (behavior settings). Therefore, this study was conducted to identify and analyze how a sense of community affects the formation of behavior settings, in other words, it explains how the synomorphy mentioned in stable behavior settings is dependent on both internal factors, such as capabilities expected within the territory, and external factors, such as sense of community. Hence, as a novel concept mentioned in architecture and urban planning, public spaces provide an opportunity to create new solutions in the structures of urban neighborhoods while taking social values and beliefs into consideration. Considering how rituals in different neighborhoods of each city consist of unique features, this can present a novel concept with a comprehensive ability to develop the concept of public spaces. Therefore, the two general concepts of public spaces and ritual spaces are proposed as behavior settings. The design and architecture of every milieu (public space) must be consistent with its content, which is humans and a culture in line with a community where self-fulfillment is achieved (behavior-milieu synomorphy), and rituals are directly related to the culture and beliefs of a community. Therefore, concepts, principles, and criteria of ritual public spaces were proposed as a study case and the effect of a sense of community in the formation of ritual public spaces in Tabriz was analyzed.

Research Method

The present study has an applied nature as per its objective and utilizes a reproductive strategy. In accordance with this strategy, and seeking to answer how the behavior-milieu synomorphy in a behavior setting is influenced by the sense of community components significantly, first, the meaning of a behavior setting, as well as environmental principles and criteria related to it were explained through a qualitative approach and reference to desk research.

Secondly, the sense of community concept and its effect on the behavior-milieu synomorphy were compiled through desk research. Thirdly, the theoretical model, obtained through field studies in ritual public spaces in Tabriz, was analyzed according to the event model,

analysis of ritualistic behavior, and the type of places formed in relation to the rituals (Fig. 1).

Literature Review

Considering that concepts of behavior systems and behavior settings provided much richer foundations to recognize the environment, compared to the shallow study of land use and construction, freed architects from attributing unknown behaviors to people and using designing models with no intellectual support (Lang, 2016, 135). Therefore, the attention of architects and urban planners was drawn to the link between behavior setting and design which was later developed. (Motalebi, 2001, 58). Lang presented the behavior setting concept in the form of a neo-functionalism strategy as opposed to paradigmatic and pragmatic strategies and as a theoretical framework for explaining and describing the human-environment relationship in designing. In his book, Creating Architectural Theory (1987), he attempts to deem the function of a built environment based on human behavior patterns that are affected by the cultural context and stresses the necessity of a much broader range of human needs, including biological, social, and mental needs (Golrokh, 2012, 65). According to Jon Lang's view, different environments could either deter or facilitate people's behaviors; however, they do not determine their behaviors whatsoever. Hence, the final result of an interaction between a human and a built environment cannot be achieved only through adapting one's behavior to the space; co-existence between behavior and space is a result of contingent correlation between the two through the final decision of someone based on their intellectual and physical abilities, needs, media, and social and cultural norms (Lang, 2002). According to Tony Cassidy, if people are homogenous in public spaces, there is a higher chance of intercommunication while being heterogeneous raises the possibility of no communication (Cassidy, 1977, as cited in Salehinia and Memarian, 2009). Physical capability in forming behavior is one of the discussions mentioned by James J. Gibson. According to Gibson, environment capabilities include the physical configuration of a behavioral place, which makes it usable for specific activities, and provides aesthetic meanings and receptions. In addition to these capabilities of the built environment, (Lang, 2016, 91) supports some behaviors while limiting others (ibid.).

Sense of community, as another subject related to the study, was first introduced by Sarason (1974). McMillan and (1986) Chavis later redefined the sense of community and its indices to create a significant relationship between the concept of community and the sense of community and analyzed the sense of community in urban neighborhoods (Ramos, Carvajal Suarez, Leon & Trinidad, 2017, 12). In the modern architecture movement, individuals, such as Henry Wright, Josep Sert, and MARS Group compiled the model concepts of neighborhoods to develop a sense of community through a network of friends and acquaintances in a mutual territory. Further, architects such as Le Corbusier and Frank Lloyd Wright used this theory in their designs by imagining human behavior in the future (Lang, 2016, 196).
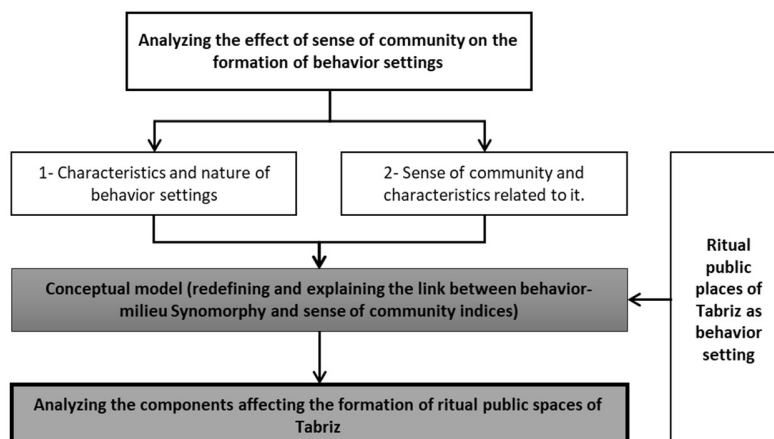

Fig. 1. The overall research paths.Source: Authors

In recent decades, human aspects, the social quality of a place, and concepts such as community have been mentioned in architecture and urban planning more than ever. Further, orientations have changed to using ideas affected by the sense of community (Francis, Giels-Corti, Wood & Knuiman, 2012) in architecture and urban planning to create a strong bond between humans and the built environment (Moatasim, 2005.) Nonetheless, few studies have been conducted on the effects of built environments on creating a sense of community (Mahmoudi Farahani & Lozanovska, 2014, 223 & Moustafa, 2009, 72). As per the explanations above and the mentioned necessities,

studies related to the interface of behavior settings and a sense of community were examined, as depicted in Table 1, with an analysis of research results. Then the necessity of this research with a focus on ritual public spaces has been mentioned.

Most orientations in the conducted studies were done in relation to the effect of the physical environment on behavior in libertarianism, possibilism, probabilism, and determinism (Rappaport, 1977, as cited in Salehinia & Memarian, 2009, 7). Considering the few studies conducted on the effect and susceptibility of the sense of community and built environment, researchers in built environment studies are trying hard to determine

Table 1. Studies related to behavior settings and a sense of community. Source: Authors.

Researcher	Pub. Year	Title	Research Objective	Results
Salehinia & Memarian	2009	Sociability of Architectural Space	Examining the effect of the physical environment on behavior, and measuring fixed, semi-fixed, and non-fixed elements and psychosocial factors on the sociability of an architectural space	-Boosting synomorphy by leaning to interactions and more presence through a specific mix and cohabitation of human factors, such as gender, job, level of education and major, economic status, temporary mental and personality states with some fixed, semi-fixed, and physical dynamic elements, as well as space location in the general space organization
Ansari, Jamshidi, & Almasifar	2010	To Investigate Feeling of Territory and Territory Traveling in Urban Case Study: SAEE PARK	Investigating the trend of territory effect on place usage and the manner of applying methods toward territory feeling in urban parks.	-Enhancing environmental security and efficiency by increasing a sense of territory, and ownership, and simulating behavior through precision in view and sight designing, making spaces with natural view, luminescence, and various facilities.
Sarbandi Farahani, Bahzadfar, Abbaszadegan & Alvandipour	2014	Environmental Qualities on Behavior Settings in Local Green and Open Spaces	Identifying the environmental quality norms affecting the desired settings	-Visual and physical permeability norms, variation of activities, safety, and welfare of the environment play a significant role in shaping behavioral settings in local green and open spaces.
Delake, Behzadfar, Ghalehnoee & Bakhtiar Nasrabadi	2017	Recognition of Behavioral Patterns in Enghelab Square of Isfahan	Recognizing behavioral settings and patterns in the spaces around Si-O-She Pol	-Recognizing the most important behavioral patterns around Si-O-She Pol, and proposing solutions to enhance behavior and physical environment.
Francis, Giles-corti, Wood & knuiman	2012	Creating Sense of Community: The Role of Public Space	Analyzing the relationship between a sense of community and public space quality	-The existence of high-quality public spaces in neighborhoods regardless of how often they are used may be important in boosting a sense of community among the residents. -The sense of community leads to an increase in participation in social affairs and physical and mental health.
Mahmoudi Farahani & Lozanovska	2014	A Framework for Exploring sense of community and Social Life in Residential Environments	The role of the built environment in the sense of community and social life	-The effect of a built environment features a sense of community by increasing interactions and providing a pedestrian-friendly environment. -The role of a sense of community and social life in forming a healthy and safe society and improving the local economy and a sustainable community.
Zhang & Zhang	2017	Perceived Residential Environment of Neighborhood and Subjective Well-being among the Elderly in China: A Mediating Role of Sense of Community	Analyzing the relationship between perceived neighborhood environment and mental well-being, and the effect of a sense of community as its intermediate variable.	The neighborhood environment depends on life satisfaction, meaning in life, and positive changes. Sense of community plays the role of an intermediate between the neighborhood environment and life satisfaction to some extent while it fully mediates the relationship between the neighborhood environment and meaning in life and positive changes.

a framework regarding the sense of community (i.e. sense of community indices) in accordance with the physical characteristics of the environment. Further, a complete and comprehensive analysis has not been conducted on the effects and susceptibilities of culture on the sense of community and its role in behavior settings. As a result, this study aims to identify indices affecting the sense of community in forming behavior-milieu synomorphy in behavior settings. Hence, the role of the sense of community, as the fundamental social-psychological factor (Zhang & Zhang, 2019, 6) in forming a ritual public space as a behavior setting, will be analyzed.

Theoretical Foundation

• **The Concept of Behavior Setting**

Ecological psychology and, subsequently, the theory of behavior settings have gone through adjustments throughout time, a significant part of which was the formation of two opposing yet complementing views. The first one is the traditional view that regards a behavior setting as a transpersonal and self-regulating system. The characteristics of behavior setting according to the traditional view (Barker, 1968) consist of constant behavioral patterns, milieu and its integration with constant behavioral patterns, the inclusion of the milieu that encloses the constant behavioral pattern, and a specified degree of interdependence between the behavior patterns and the milieu (synomorphy) with a greater degree of

interdependence of synomorphy among themselves (having unity and internal harmony), as well as the existence of a period.

In the second view, behavioral patterns are social structures and a result of interaction between individuals among themselves, as well as definitions that are formed in this relationship. The internal interactions of behavior setting must be regarded under the process of sense-making by the individuals inside it. An individual's opinion and interpretation of a behavior setting as highly affected by his/her beliefs that he/she has gained through past experiences in the environment. It affects her/his perception of the new environment while his/her mental image might change due to this new experience and taking part in the events (Wicker, 2002, 118) (Table 2).

According to psychology definitions (Wicker, 1970; Scott, 2005), the characteristics of behavior settings in determining human behavior in the second view can be introduced in transpersonal nature, dependence and synomorphy of milieu and behavioral pattern, the self-regulating feature, and the subject and object role of individuals in the behavior setting (Golrokh, 2012, 16-18).

In addition to the aforementioned, it is necessary to analyze the effects and interaction of an individual with his/her surrounding environments based on the ecological systems proposed by (Bronfenbrenner, 2005). According to Bronfenbrenner, an individual is a complex system of interaction on

Table 2. A comparison of different phases of schools of psychology, and their philosophical foundation and methodology. Source: Authors.

Phases of Schools of Psychology	Phase One of Psychology	Phase Two of Psychology (Classist Ecological Psychology)	The formation of the theory of behavior settings with a traditional view	Phase Three of Psychology (Modern Ecological Psychology)	The formation of the concept of sense-making cycles in the theory of behavior settings with a modern view
Epistemology	Behaviorism as a principle (emphasis on the individual and personal features)	An ecological view on the study of behavior and human experience (environment as an organized whole)		An ecological view on the study of behavior and human experience and the culture and beliefs of people in the community	
Methodology	Experimental studies as a strategy	Presence in context and the study of it. The significance of the environment		Simultaneous attention to object and subject	
Philosophical Foundation	Logical positivism	Phenomenological		Neo-functionalism	
Theoretical Approach	Test-oriented science	Study and record daily events		Study and record behavior, environment, and culture	

whom several levels of the surrounding environment affect. In this theory, the environment structure is categorized into different levels: the microsystem, the mesosystem, the exosystem, and the macrosystem. Microsystems refer to the interaction of a developing individual with his/her immediate environment, such as family, neighborhood, and playing areas, mesosystems refer to interactions between immediate environments, exosystems refer to the social environments that influence the developing individual but do not include him/her, and macrosystems refer to values, rules, traditions, social beliefs, and lifestyle that affect activities and interactions at all internal levels. Additionally, the chronosystem refers to the dynamic and changing nature of an individual's environment as a dynamical system (Jenson & Olsen, 2019, 49). In another discussion related to the effects and interactions of an individual with the surrounding environment, in his book titled Paradaym Haye Masa'leh Dar Memari, Nari Ghomi divides behavior into two groups: periodic and short behavior and behavior stabilized with time (cultural behavior). Further, he regards the stabilization and modification of cultural behavior models in attention to cultural behavior in designing (Fig. 2). so that behavior-milieu synomorphy is dependent on the general culture of the society, and if a general culture has a behavior-milieu model, it must present its specified system at the level of patterns (Nari Ghomi, 2015, 135).

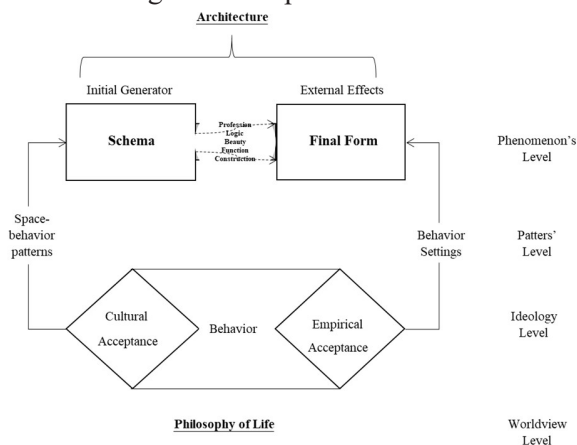Therefore, designing aims to decide what set of behavior settings and reciprocal interactions among

Fig. 2. A model of the influence of cultural behavior on the formation of milieu. Source: Nari Ghomi, 2015, 133.

them must be supplied, and how synomorphy among the activities (behavior patterns and milieu) must be provided. Further, it is noteworthy that the process of an environment's influence on behavior and the impact of behavior on the environment are two different aspects; in the first one, the built environment affects behavior with all its being while in the second one, behaviors that influence it may be considered favorable, significant, or unavoidable. As a result, regarding the milieu and cultural lifestyle, the physical background of behavior occurrence and the behavioral background shaping the milieu must be discussed from the viewpoint of culture (ibid.).

• **The Concept of a sense of community**

In describing the sense of community, Sarason defined a sense of community as a perception of similarity to others, independence with others, a willingness to maintain this interdependence by doing things we expect others to do, and a sense of belonging to a reliable and stable structure (Zhang & Zhang, 2017, 6). McMillan and Chavis define four indices and measurable components for each index to assess the sense of community in urban neighborhoods (Ramos et al., 2017, 12). These four indices include membership, influence, integration, and fulfillment of needs and shared emotional connections (Winkle & Woosnam, 2014, 23-24). Kim & Kaplan identified four domains of place attachment (belonging), community identity, social interactions, and pedestrianism in the literature on the sense of community and new urbanism, and added another aspect to the psychological aspects. Place attachment can be expressed in different ways, including community satisfaction, sense of connectedness, personal and collective tradition, and history, sense of ownership, and social integration. Community identity is obtained through characteristics of the physical environment, including uniqueness and distinctiveness, continuity and bond between past and present, pride, the compatibility of the environment with time, place, and behavior, and cohesiveness. Further, social interaction is measured by face-to-face social encounters and informal relationships, community interactions, and

social networks (Kim & Kaplan, 2004, 313-316). The final component is pedestrianism, which is defined as granting necessary services within walking distance, accessibility of public spaces, public transportation with proper access, and human-scale designs to create a high-quality environment and sense of closeness and comfort in the streets (Gehl, 1996 & Kim & Kaplan, 2004, 313-316).

The sense of community indices mentioned above must be studied beyond personal behaviors and interactions, and as a transpersonal variable, although they are a proper tool in social sciences (Hill, 1996 Quoted from Moustafa, 2009, 79; Kim & Kaplan, 2004, 315). For example, in their criticism of the mentioned sense of community indices, Sonn et al. regard the immethodical use of the indices by the researchers as the factor behind the individualistic and insignificant perception of the sense of community and an obstacle to using the sense of community framework as a guide for studies in the community domain. Further, they stress that the indices could not analyze how various views affected the performance of the sense of community because using personal variables prevented analysis of historical, intercultural, and social backgrounds (Dunham, 1986 & Sonn, Bishop & Drew, 1999, 208-211) and perception of the nature of behavior settings. People tend to share meanings with the world, and share experiences and events in a shared space and time. Also, shared history, shared experiences, symbols, and common stories play a significant role in community construction and maintenance. As a result, they recommend cultural studies as a transpersonal phenomenon that informs a sense of community alongside the sense of community indices (Sonn et al., 1999, 211-215) (Table 3).

• **Synomorphy of Sense of Community that Shapes Behavior Settings**

The power of a behavior setting in determining human behavior is caused by high synomorphy among all the behavior setting components (milieu and behavioral pattern), which leads to the internal cohesiveness of the behavior setting. Some physical environments are more capable of supplying some behaviors (Gibson, 1977), or are more befitting of a behavior (Alexander, 1964).

Roger Barker introduced eight sources- physical forces, social forces, the impact of behavior on milieu, physiological processes, physiognomic perception, learning, choice by individuals, and choice by behavior setting- for the behavior-milieu synomorphy. Further, he considers some signs of internal unity and the compulsory nature of behavior setting, as well as some synomorphs inside it, dependent on these sources. Lang introduces recognizing the components affecting the shaping of behaviors, supplying behaviors in every micro-place and people's willingness to them, adaptability and flexibility of the environment based on needs and as per behavior changes throughout time, personal and group differences, recognizing gender roles, lifestyle, cultural differences, micro-cultures and characteristics of a geographical environment and understanding of costs and benefits, personal values and motivations, and the extent of adaptability of people, to explain the synomorphy of the physical environment and behavior patterns, and compiling a quantitative method to assess compatibility to the environment (Lang, 2016, 133). Further, he deems the incompatibility threshold of people with the environment in their criteria for judgment and their perception of being in a place and considers similarities in judgments related to a more stable culture and a socioeconomic background (Lang, 1994, 186).

Therefore, if a built environment is considered a system of human presence settings, to recognize human presence, it is necessary to recognize the current state of human presence in the environment and an ideal cultural state. In recognizing the present state of human presence, the internal aspects of a human, including the material, mental, social, and spiritual aspects gain importance. In this case, the more the subject of the environment's influence goes from the internal human nature to material objectivity or the world of sense, the more shared subjects will it have with other humans (Nari Ghomi, 2015, 157). To study such relations (Human-environment relations), different levels of user-environment interactions and characteristics of behavior settings become important. At the more surface level, the conditions of occurrence are divided into four groups: emotional, movement, psychological,

Table 3. Criteria that shape and affect the sense of community. Source: Authors.

Factors	Criteria
External factors and physical characteristics of the environment	-Social support network -Leadership power to support and organize -Landscaping -The social identity of the environment (continuity and compatibility of the environment with time, place, and behavior) -Environment with the ability to increase interactions -Pedestrianism
Personal factors and connections	-Interdependence with others -Shared interactions -Mutual satisfaction with needs -Shared place (belonging) -Perception of similarity with others (psychological roots: psychological and social conditions influenced by collective experience)
Transpersonal factors	-Perception of similarity with others (upstream perception) (Rooted in beliefs: perception influenced by shared culture, narration, and history, shared meaning)

and environmental needs) (Nair & Fielding, 2009, quoted by Nari Ghomi, 2015, 161). Further, to achieve optimal action conditions, behavior is divided and analyzed based on the quality of action, the time of its occurrence, and the location of its occurrence. Hence, immediate effective environmental conditions, such as physical conditions, physiological conditions, and implicit perceptions become important. The second level includes matters related to the action and milieu (presence, reclusiveness, and privacy) and is associated with the relation between the action or the individual's (group's) presence with others through the milieu. The higher levels (third and fourth) are completely perceptual, meaning the human first perceives something regarding the environment and this perception affects the quality and intention of carrying out that action. In other words, the third level is the psychosocial conditions related to life experiences (psychological labels: environment, territory, personal space, etc.) while the fourth level belongs to perceptual concepts whose production is on the community, their collective agreement, and upstream culture. Understanding this depends on the individual's familiarity with the community's culture, and as a result, psychosocial conditions related to collective experiences (sense and identity) are brought up, encompassing matters, such as collective memory, sense of place, place attachment, sense of belonging, the spirit of place, meaning, and identity of place (Nari Ghomi, 2015, 157-202) (Table 4). According to the aforementioned, behavior settings consist of pillars and factors involved in the behavior-milieu

synomorphy. When a specified and consistent general culture is accepted as a present reality, and the goal of design is to optimize the environment for the cultural life of someone (ibid.), the sense of community can act as an effective factor in behavior settings so that it would lead to increased environmental capabilities under the influence of culture to show specific behaviors. Then, it would develop under the influence of environmental features and form the behavior-milieu synomorphy (Fig. 3).

Case Study

As a total of open and closed spaces that are considered the significant elements of urban structures, and with characteristics, such as creating a sense of trust, dignity, belonging, and increased participation among the residents, public spaces can act as a successful place to shape behavior settings and hold rituals shaped by culture and community beliefs in urban neighborhoods. Hence, they contain the necessary potential to shape environments that respond to behaviors affected by culture in the form of architecture and the sense of community. As per such definitions, ritual public spaces refer to a set of public spaces where ceremonies, rituals, and beliefs in line with each community can be held, and seek to meet shared material and spiritual needs.

Considering the characteristics mentioned above, spaces for holding ritual ceremonies in Tabriz were identified, and the features of behavior settings in them were examined. (Table 5) Given the conceptual model obtained in the theoretical studies, a questionnaire

regarding the sub-criteria of synomorphy and sense of community was prepared, and the statistical population was interviewed to assess how the sense of community acts as a human presence catalyst in the environment and functions as the base element in increasing the factors influencing harmony and synomorphy. After data analysis and theory testing, the extent of the sense of community's impact on synomorphy and, consequently the formation of behavior settings was achieved.

Research Findings

The methodology of this paper is correlation. The sense of community characteristics, as an independent variable, and behavior settings characteristics, as a dependent variable, were analyzed, and the factor loading of each

metric, as well as the position of each variable created in the theoretical model, were determined.

The process of data collection was random and conducted among residents participating in the ritual ceremonies of Tabriz. 386 questionnaires out of 924 questionnaires distributed (electronic and printed) were returned completed. According to Morgan Table, the sample size, in the population of Tabriz, was determined to be 373 and analyzed.

Data Collection for the questionnaire was done in three parts:

The first part consisted of the statistical specifications of the respondents and the ritual space they would prefer to attend (Table 6).

The second part consisted of evaluating the respondents

Table 4. Overlap of factors affecting synomorphy and recognition of human presence with an emphasis on structural levels of Bronfenbrenner. Authors: Authors.

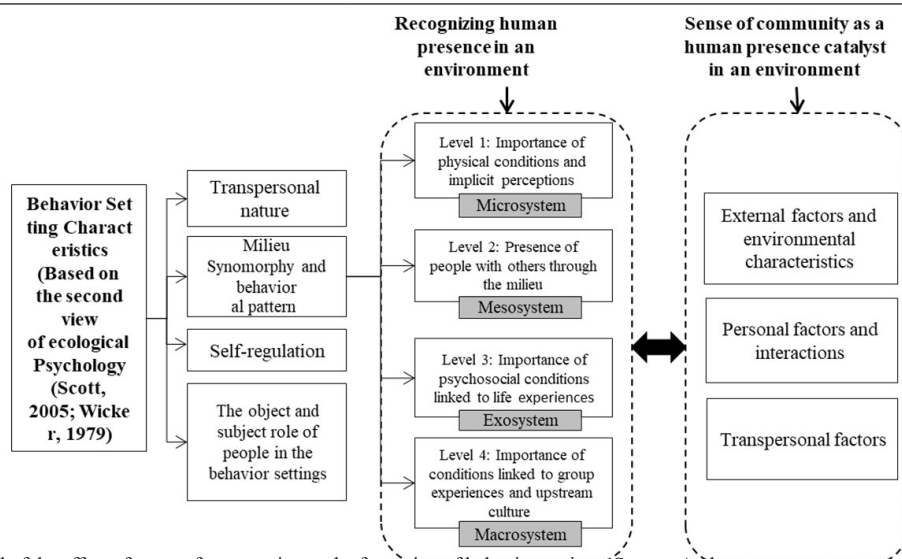| Recognizing the conditions of human presence		Factors influencing synomorphy
Level 1: The importance of physical conditions and implicit perceptions (action occurrence in the movement, psychological, physical, and environmental needs classification) (Nari Ghomi, 2015).	Microsystem	Physical forces, physiological processes, and the compatibility of environment with people's abilities. Constant use of space-specified physical characteristics (Barker, 1968).
Level 2: The presence of an individual with others through milieu (social matters associated with action) (Nari Ghomi, 2015).	Mesosystem	Influence of behavior on milieu, adaptability and flexibility of the environment based on needs and changes in behavior over time, adaptability of individuals, similar social and economic background. (Lang, 2016, 133).
Level 3: The significance of psychosocial conditions related to life experiences (effect of subject perception of action occurrence- complete interaction of an individual with milieu) (Nari Ghomi, 2015).	Exosystem	Social forces, perception, gender roles, personal and group differences, personal values and motivations, durability of current patterns, and psychological characteristics of the users. (Barker, 1968; Lang, 2016).
Level 4: The significance of conditions associated with collective experiences and upstream culture (action occurrence under the influence of upstream perception-complete interaction of an individual with milieu) (Nari Ghomi, 2015).	Macrosystem	Place attachment, interpersonal and transpersonal interactions, cultural forces, sense, and identity factors. (Barker, 1968- Lang, 2016).

Fig. 3. Conceptual model of the effect of sense of community on the formation of behavior settings. Source: Authors.

regarding the characteristics of behavior-milieu synomorphy in ritual public spaces of Tabriz as a case study. The third part, as per the theoretical model mentioned (Fig. 2) included the evaluation of the respondents regarding the characteristics of the sense of community and its measurement in the domains of external factors and group features, personal factors and interactions, and transpersonal factors. The reliability of the questionnaire was confirmed at a high level with a Cronbach Alpha value of 0.851.
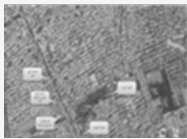
The first validity test of the factor analysis is the KMO test (the Kaiser-Meyer-Olkin Measure of Sampling Adequacy) and Bartlett's Test of Sphericity. When the value of KMO is greater than 0.6, we can easily conduct factor analysis.

The greater this value gets, the more adequate and qualified the sampling will be. In this study, the coefficient was 0.854 (Table 7).

To confirm the validity of the results, the Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and X^2 (chi/df) were applied. Then, a fitted model in the modeling of the structural equation was used to assess the theoretical model.

A model whose X^2 to Degree of Freedom (DOF) is less than 3, the RMSEA is less than 0.08, and the GFI and the AGFI are greater than 60% has an adequate fit. In this study, according to the results of confirmed factor analysis and assessment indices, all the measurement models have an acceptable fit (Table 7).

Table 5. Analyzing characteristics of behavior settings in ritual public spaces in Tabriz. Source: Authors.

Case Study	Tabriz Bazaar	Maralan St. (Maryan Naneh Neighborhood)	Hassan Alley	Nader Intersection area
Site location (geographical territory)	Tabriz Bazaar and its surrounding area hold ritual, national, and religious ceremonies every year	Between Maralan Intersection and Fadak Intersection, encompassing the center of important neighborhoods and religious buildings, such as Al-Mahdi Mosque, Miyaneh, Sheytan Abad, Armenian, Maryam Naneh Church, and the Embassy of Russia	Hassan Alley is located across from the Chahardah Masom Mosque among the gardens and is one of the important centers for holding urban-scale ritual ceremonies	Nader Intersection area in the proximity of Golestan Garden, Aqabala Mosque, one of the regions famous for holding ritual ceremonies, especially for mourning processions
Period	Religious and national holidays, Muharram throughout the year	Religious and national holidays, Muharram	Muharram	Muharram
Transpersonal nature (specified feature)	Centripetal and linear	Linear	Centripetal	Centripetal and linear
Repetitive behavior	Social and economic interactions of people during the year. Ritual processions. Celebrations during Nowruz	Religious and economic interactions of people during the year. Holding linear and centripetal mourning processions. Nowruz shopping bases. Charity bases during specific national and religious ceremonies	Religious interaction of people and holding mourning processions during Muharram and Safar ceremonies	Religious interaction of people and holding mourning processions during Muharram and Safar ceremonies
Self-regulation	Flexibility and adaptability of Tabriz Bazaar throughout history and according to various behaviors	The street is prepared in accordance with different ceremonies	This setting changes based on various functions during the year	This site changes as per Muharram rituals during Muharram
Behavior-milieu synomorphy	The presence of factors affecting synomorphy, such as physical and social forces. Environment adaptability and flexibility	Shared social-economic background. Harmony of the environment with people's abilities, continuous use of space	Durability of current patterns. Specified physical characteristics. Sense and identity factors	Effect of behavior on milieu, similar psychological characteristics of the users, harmony of the environment with people's abilities

Modeling with hidden variables, and multiple regression. Analysis through the software is conducted by data preparation using SPSS and then compilation, diagnosis, estimation, test, modification, and final validation through EQS (Fig. 4). In the graph of the structural equation model Fig. 4, the circles denote hidden factors, and the rectangles denote measurement metrics related to those factors. Further, the numbers of the small rectangles with code E depict the unknown variance value for each variable.

Table 8 introduces the symbols of all metrics of the Confirmatory Factor Analysis model. The factor loadings of the metrics of the hidden factor physical conditions and implicit perceptions range from 0.61 to 0.72, social matters from 0.37 to 0.54, psychosocial conditions related to life experiences from 0.48 to 0.57, and the hidden factor upstream perception from 0.42 to 0.64. Further, the factor loadings of the metrics of sense of community for the hidden factor external factors and environmental characteristics range from 0.51 to 0.64, personal factors and interactions from 0.63 to 0.79, and transpersonal factors from 0.54 to 0.70. Since metrics with a factor load lower than 0.4 are screened due to their insignificant effect on the measurement of

the hidden variable, one of the metrics was removed and the others were defined as the factors affecting the criteria that shape behavior settings.

In this model, first, the factors affecting synomorphy were analyzed with the four criteria movement, psychological, physical, and environmental needs linked to action occurrence(the importance of physical conditions and implicit perceptions), social matters linked to action(the presence of an individual with others due to milieu), impact of subject perception on action occurrence(the importance of psychosocial conditions related to lifespan and action occurrence influenced by upstream perception (the importance of conditions related to collective experiences and upstream culture (action occurrence influenced by upstream perception).

Table 9 presents the factor loading and the p-value of each criterion. According to the research findings, the impact of perception on action occurrence accounted for the criterion most effective on synomorphy. Social matters and upstream perception are the next factors affecting synomorphy while physical conditions and implicit perceptions are lower.

Further, factors influencing the sense of community were analyzed with three criteria: external factors,

Table 6. The percentage of the coefficients of age, gender, education, and participation in ritual ceremonies. Source: Authors.

Variable	Variable Type	Percentage
Gender	Female	57.1
	Male	42.9
Age	<20	5.4
	21-40	60.3
	41-60	29.2
	<60	5.1
Education	Dropout	3.8
	Diploma	21.2
	Bachelor's	43.7
	Master's	23.9
	Ph.D.	7.5
Participation in ritual ceremonies	National	36.7
	Religious	21.7
	Both	41.6
The chosen ritual neighborhood	Tabriz Bazaar	44.8
	Maralan St. (Maryam Naneh Neighborhood)	8.8
	Hassan Alley	1.6
	The Nader Intersection area	3.5
	Other	41.3

personal factors, and transpersonal factors. Table 8 depicts the factor loading and p-value of each criterion. In this model, external factors and environmental characteristics account for the criterion most effective on the sense of community. Afterward, transpersonal factors function as influential components in the sense of community. Personal factors and interactions account for less compared to the other two aspects.

Finally, the extent of the impact of the sense of community as a human presence catalyst was estimated by combining both models and the correlation between the sense of community and synomorphy shaping the behavior settings was estimated at 0. 83 (Table 10). By referencing what has been mentioned, the synomorphy shaping behavior settings is a sense of community. In other words, a sense of community has a significant effect on the formation of behavior settings.

Discussion

With reference to research findings regarding the extent of factors affecting synomorphy shaping ritual public spaces of Tabriz as a behavior setting and factors affecting the sense of community, psychosocial conditions linked to life experiences (the exosystem level) are of more importance among the participants of ritual ceremonies. This is because analyses based on theoretical foundations associated with characteristics of behavior settings in ritual public spaces of Tabriz show memories, experiences, and deep attachment to the place where ceremonies are held laying the groundwork for the presence of people in the ritual public spaces of Tabriz, indicating that most people are willing to participate in ceremonies held in their childhood neighborhoods. Also, life experiences, such as crowdedness in places where the ceremonies are held are a completely anticipated mentality. Furthermore, according to the characteristics of behavior setting in ritual public spaces in Tabriz, understandable division is done in a way that the place where rituals are held is properly divided and is understandable. Hence, the importance of how these ceremonies are organized among the environment users has led to the understanding that subject perception and psychosocial conditions related to life experiences in the formation of synomorphy of behavior settings are important. According to Meagher the abilities and decisions the environment provides for people affect their behavior. In other words, people perceive the environment after functional experiences (benefits and uses the environment offers) (Meagher, 2019). Next, social matters and upstream perceptions with similar impact emerged. This is because in ritual public spaces of Tabriz, the path, how the ceremonies are organized, and the specified physical characteristics, such as historic
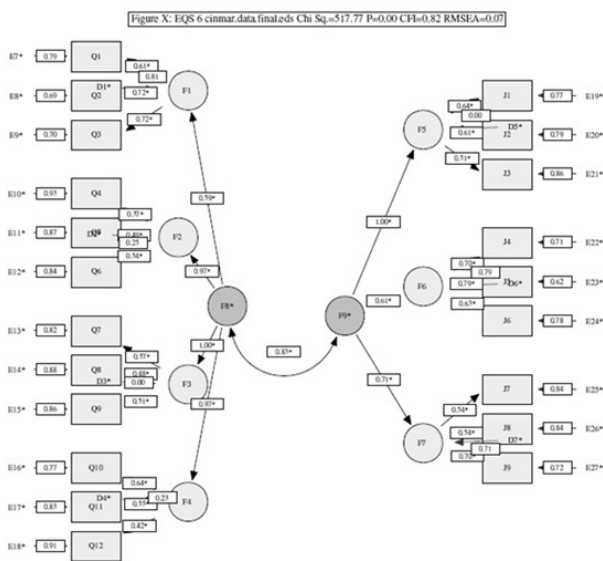

Fig. 4. The structural equation model of sense of community as a synomorphy forming behavior settings. Source: Software output.

Table 7. The KMO test and fitting indices proper for the model. Source: software output.

Fitting indices proper for the model	Measured value
KMO	0.854
.Chi Sq	517.77
GFI	0.877
AGFI	0.835
CFI	0.821
RMSEA	0.074
Chi/df	3.01

Table 8. Symbols of the structural equation modeling of sense of community as the synomorphy that shapes behavior settings. Source: Authors, based on software output.

Component	Group	Metrics	Factor Loading	Symbol
Behavior-milieu synomorphy (synomorphy of milieu and behavioral (pattern) (F8)	Level 1: Physical conditions and implicit perceptions	The quality of the environment where ceremonies are held to meet physical and psychological needs	0.61	Q1
		Physical environment facilities (such as the possibility of parking cars, space for walking, sitting, etc.)	0.72	Q2
		Comfort while watching the ritual ceremonies	0.72	Q3
	Level 2: The presence of an individual with others through a milieu (social matters)	Simultaneous prediction of a semi-open space (such as balconies) and open spaces for the mass	0.37	Q4
		Sufficient safety	0.49	Q5
		Order in holding the ceremonies despite the crowdedness and lots of movements	0.54	Q6
	Level 3: Psycho-social conditions related to life experiences	(Memories and experiences) and intense attachment to the space where ceremonies are held	0.57	Q7
		The mentality shaped from childhood regarding crowdedness where ceremonies are held	0.48	Q8
		Understandable division of the place where the rituals are shown and the ceremonies are watched	0.51	Q9
	Level 4: The importance of conditions related to group experiences and upstream culture	Shared experience with older generations in holding ritual ceremonies traditionally	0.64	Q10
		The mentality of moving in a linear or circular path during the ceremonies based on past experiences	0.55	Q11
		Remembering the identity and history shared with others through historical buildings where the ceremonies are held	0.42	Q12
(Sense of Community (F9)	External factors and environmental features	Possibility of interacting with others through holding ritual ceremonies	0.64	J1
		The process of holding ceremonies and how they are organized	0.61	J2
		The support of particular groups in holding ritual ceremonies	0.51	J3
	Personal factors and interactions	Social credit	0.70	J4
		Meeting shared needs	0.79	J5
		Socio-economic status similar to the participants	0.63	J6
	Transpersonal factors	Social-religious factors similar to the participants	0.54	J7
		Personal beliefs	0.54	J8
		One's lived experience (culture and history shared with others)	0.70	J9

and religious buildings as transpersonal nature (specified characteristic) of the ritual public space, appear as a memory from older generations. Wicker mentioned this feature as a sense-making cycle (Wicker, 2011, 7). Based on this view, individuals affected by knowledge and their beliefs attend a behavior setting and are accompanied by its events (ibid.). Some of the reasons behind the importance of social matters are the components Bronfenbrenner classifies as the macrosystem level that affect all internal levels, self-regulation of ritual public spaces to various behaviors and in line with different days, and the influence of behavior on the formation of a proper space with it, such as understanding the presence of order in holding ceremonies despite crowdedness and lots of movements. Based on the behavior setting idea, models similar to the milieu model may be able to accept various behavioral patterns for different people at different times of the day, week, or year (chronosystem in Bronfenbrenner's theory) (Golrokh, 2012, 58). According to the mentioned, behavior occurrence in the environment is highly dependent on whether the context in welcoming of the occurrence of these behavioral patterns. Nevertheless, what happens depends on the orientations, motivations, knowledge, and abilities

of people who are involved; if it exceeds a simple relationship between the person and the environment, cultural processes at the macro level are also linked with the physical environment. For example, the unique abilities of an environment are formed in social-cultural frameworks exclusive to the community that collectively create and maintain behavioral opportunities (macrosystem level). Further, considering some abilities are formed through community activities, many social values and unique cultural priorities are created in their products, artifacts, and built environments (Meagher, 2019, 6).

Physical and convenience facilities are less important to the participants compared to other factors while watching the ceremonies. This is even though past research findings show physical factors, such as sidewalks (Mahmoudi Farahani & Lozanovska, 2014, 226; Lund, 2002). were important. This comparison shows that a force stronger than surface physical factors attracts various people to behavior settings.

Further, according to sense of community indices in research findings, external factors and group characteristics are more important to the participants of ritual ceremonies because they provide an opportunity for individuals to interact with others through ceremonies in different conditions. Also, how ceremonies are organized encourages people to attend these ceremonies, showcasing the power of ritual public spaces in Tabriz in determining the behavior

of the users, which is caused by synomorphy among all behavior-setting components and leads to internal harmony according to Lang's view (Lang, 2016, 123). Furthermore, shared culture and history with others and mutual beliefs are highly important to the users of public spaces because sense, identity, and similar backgrounds among the participants connect them to an upstream perception, caused by upstream culture. This leads to behavior-milieu synomorphy and a strong bond among the components shaping the ritual public spaces of Tabriz, such as geographical location, period, transpersonal nature, repetitive behavior, self-regulation, and synomorphy. As (Rapoport, 1995). stated, a sense of community can be inferred as a shared narration (experience), and perceived by analyzing shared stories and rituals of a particular group (Sonn et al., 1999, 215). On the contrary, personal factors, such as social credit and meeting mutual needs had the least effect on the users regarding selecting ritual public spaces, indicating transpersonal factors and upstream perceptions play an effective role in people's culture. In other words, the sense of community of people is an effective factor in shaping ritual public spaces in Tabriz (Fig. 5).

Conclusion

Research results indicate that there is a significant relationship between the place-milieu synomorphy as a characteristic of behavior settings and variables involved in a sense of community. According to the findings, a

Table 9. Factor loading and p-value of criteria assessing behavior-milieu synomorphy and sense of community. Source: Authors, based software output.

Variable	Symbol	Factor Loading	P-value
Synomorphy (physical conditions and implicit perceptions)	F1	0.59	0.00
Synomorphy (Social matters)	F2	0.97	0.00
Synomorphy (Psychosocial conditions related to life experiences)	F3	1.00	0.00
Synomorphy (Upstream Perception)	F4	0.97	0.00
Sense of community (External factors)	F5	1.00	0.00
Sense of community (Personal Factors)	F6	0.61	0.00
Sense of community (Transpersonal factors)	F7	0.71	0.00
** Correlation is significant at the 0.001 level (P<0.001)			

Table 10. The factor loading and the p-value of assessment of sense of community as synomorphy shaping behavior settings. Source: Authors, based on software output.

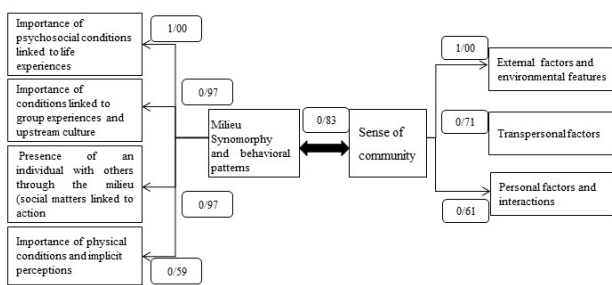| Variable	Symbol	Factor Loading	P-value
Synomorphy	F8	0.83	0.00
Sense of Community	F9	0.83	0.00
** Correlation is significant at the 0.001 level (P<0.001)			

Fig. 5. Relationship between the variable synomorphy and sense of community, and the grading of the criteria influencing their relationship. Source: Authors.

theoretical model was proposed to determine components affecting the sense of community in the formation of behavior settings to achieve stable behavior settings, and it was tested. Designers, especially urban planners, can benefit from the characteristics obtained in the theoretical model to achieve stable behavior settings. Analyzing the ritual public spaces of Tabriz to explicate the research results, shows that the environmental characteristics of ritual public spaces as a behavior setting depend on the sense of community indices. Accordingly, criteria affecting synomorphy include the effect of psychosocial conditions related to lifespan, upstream perception, and social matters while determinant factors in the sense of community include external factors, environmental features, and transpersonal factors (upstream perception and shared perception with others). This shows that sense of community functions as a human presence catalyst in the environment and acts as a base element in increasing factors influencing adaptability and synomorphy. It can be stated that the synomorphy mentioned in stable behavior settings depends on both internal factors, such as anticipated abilities in the territory, and external factors, such as a sense of community. In other words, a sense of community significantly affects the formation of behavior settings.

Endnotes

1. Synomorphy indicates that it is not possible to create a stable behavior-milieu without an interaction between a territory and human behavior. Synomorphy or explaining the relationship of behavior patterns and the physical environment patterns have been defined as co-existence, adaptability, fitness, and ability in different sources.

Reference list

• Ansari, M., Jamshidi, S. & Almasifar, N. (2010). To Investigate Feeling of Territory and in Territory Traveling in Urban Parks, Case study: Saee Park. Armanshahr Architecture & Urban Development, 3 (4), 33-48.

• Dalake, H., Behzadfar, M., Ghalehnoee, M. & Bakhtiar Nasrabadi, A. (2017). Recognition of Behavioral Patterns in Enghelab Square of Isfahan. Haft Hesar J Environ; 6 (21), 95-111.

• Golrokh, Sh. (2012). Behavior Setting A unit of Analysis of Enviroment. Tehran: Armanshahr Press.

• Lang, J. (2016). Creating architectural theory: the role of the behavioral sciences in environmental design (A. Eynifar, Trans.). Tehran: Tehran University Press.

• Lang, J. (2016). Creating architectural theory: the role of the behavioral sciences in environmental design (A. Eynifar, Trans.). Tehran: Tehran University Press.

• lang, J. (1987). Creating architectural theory: the role of the behavioral sciences in environmental design (A. Eynifar, Trans.) (2002). Tehran: Tehran University Press.

• lang, J. (1987). Creating architectural theory: the role of the behavioral sciences in environmental design (A. Eynifar, Trans.) (2016). Tehran: Tehran University Press.

• Motalebi, G. (2001). Enviromental Psychology, A new science in Architecture and Urban design. Journal of Fine Arts: Architecture & Urban Planning, 10, 52-67.

• Nari Ghomi, M. (2015). Paradaym Haye Masa'leh Dar Memari [Architectural Problems Paradaigms]. Tehran: Elm-e-Memar Press.

• Salehinia, M. & Memarian, GH. (2009). Sociopetaloid of Architecture Space. Journal of Fine Arts: Architecture & Urban Planning, 1 (40), 5-17.

• Sarason, S. (1974). The psychological sense of community. San Francisco, CA. USA: Jossey-Bass.

• Sarbandi Farahani, M., Bahzadfar, M., Abbaszadegan, M. & Alvandipour, N. (2014). Environmental qualities on behavior settings in local green and open Spaces. Journal of Urban Structure and Function Studies, 2 (5), 101-115.

• Alexander, Ch. (1964). Notes on the Synthesis of Form. Cambridge. Mass: Harvard University Press.

• Barker, R. G. (1968). Ecological Psychology: Concepts and Methods for studying the environment of human behavior. Stanford. California: Stanford University Press.

• Bronfenbrenner, U. (2005). Making Human Beings Human: Bio ecological Perspectives on Human Development. Sage.

• Cassidy, T. (1997). Environmental Psychology. Uk: Psychology Press.

• Dunham, H. W. (1986). The community today: Place or process. Journal of Community Psychology, 14, 399-404.

• Francis, J., Giles-Corti, B., Wood, L. & Knuiman, M. (2012). Creating sense of community: The role of public space. Journal of Environmental Psychology, 32 (4), 401-409.

• Gehl, J. (1996). Life between buildings: Using public space (3rd ed.). Copenhagen. Denmark: Arkitektens Forlag.

• Gibson, J. (1977). An Ecological Approach to visual Perception. Boston: Hoghton Mifflin.

• Hill, J. (1996). Psychological sense of community: Suggestions for

future research. Journal of Community Psychology, 24, 431-438.

• Hahm, J., Breiter, D., Severt, K., Wang, Y. & Fjelstul, J. (2016). The relationship between sense of community and satisfaction on future intentions to attend an association's annual meeting. Tourism Management, 52, 151-160.

• Jensen, A. K. & Olsen, S. B. (2019). Childhood Nature Experiences and Adulthood Environmental Preference. Ecological Economics, 156, 48-56.

• Kim, J. & Kaplan, R. (2004). Physical and Psychological Factors in Sense of Community: New Urbanist Kentlands and Nearby Orchard Village. Environment and Behavior, 36, 313-340.

• Lang, J. (1994). Urban Design, the American Experience. New York: Van Nostrand Reinhold Company.

• Lang, J .(1987). Creating Architectural Theory: The role of the behavioral sciences in environmental Design. New York: Van Nostrand Reinhold Company.

• Lund, H. (2002). Pedestrian Environments and Sense of Community. Journal of Planning Education and Research, 21, 301-312.

• Mahmoudi Farahani, L. & Lozanovska, M. (2014). A Framework for Exploring the Sense of Community and Social Life in Residential Environments. International Journal of Architectural Research Archnet-IJAR, 8, 223-237.

• Meagher. B. R. (2019). Ecologizing Social Psychology: The Physical Environment as a Necessary Constituent of Social Processes. Personality and Social Psychology Review, 24 (1), 3–23.

• McMillan, David. W. & Chavis, D. M. (1986) .Sense of community: A Definition and Theory. Journal of Community Psychology1, 14, 6-23.

• Moatasim, F. (2005). Practice of Community Architecture: A Case Study of Zone of Opportunity Housing Co-operative. Montreal: School of Architecture McGill University.

• Moustafa, Y. (2009). Design and Neighborhood Sense of Community: An Integrative and Cross-culturally Valid Theorical Framework. International Journal of Architectural Research, 3 (1), 71-91.

• Nair, P. & Fielding, R. (2009). The Language of School Design Patterns for 21st Century Schools. Minneapolis. MN. USA: The International Forum for Innovative Schools.

• Ramos, A. K., Carvajal Suarez, M., Leon, M. & Trinidad, N. (2017). Sense of community, participation, and life satisfaction among Hispanic immigrants in rural Nebraska. K o n t a k t press, 19, 1-12.

• Rappaport, J. (1995). Empowerment meets narrative: Listening to stories and creating settings. American Journal of Community Psychology, 23, 795-807.

• Rappaport, A. (1977). Human Aspect of Urban Form. NewYork: Perarnon.

• Scott, M. M. (2005). A Powerful Theory and a Paradox: Ecological Psychologists after Barker. Environment and Behavior, 37 (3), 295–329.

• Sarason, S. (1974). The psychological sense of community. San Francisco, CA, USA: Jossey-Bass.

• Sonn, Ch. C., Bishop, B. J. & Drew, N. M. (1999). Sense of Community: Issues and considerations from a cross-cultural perspective. Community, work and Family, 2 (2), 205-218.

• Wicker, A. (1979). An Introduction to Ecological Psychology. Monterery.

• Wicker, A. (2002). Ecological psychology: Historical contexts, current conception, prospective directions. In R. B. Bechtel & A. Churchman (Eds.), Handbook of environmental psychology, 114–126, John Wiley & Sons.

• Wicker, A. (2011). Perspectives on Behavior Settings: With Illustrations from Allison's Ethnography of a Japanese Hostess Club. Environment and Behavior, 37,295- 329.

• Winkle, Ch. & Woosnam, K. M. (2014). Sense of community and perceptions of festival social impacts. International Journal of Event and Festival Management, 5 (1), 22-39.

• Zhang, Z. & Zhang, J. (2017). Perceived residential environment of neighborhood and subjective well-being among the elderly in China: A mediating role of sense of community. Journal of Environmental Psychology, 16, 1-5.