



Users' Perception and Evaluation of Environmental Functions: Developing a Conceptual Model

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ABSTRACT: The present study seeks to investigate users' perception and evaluation of the function of designed environments and highlights a deeper understanding of man-environment relationship. The study tries to answer the question: "Is there any relationship between the physical features of environment and users' perception and evaluation of the environment and their spatial behaviors?" Such investigation contributes to prediction of users' possible behaviors in designed environments, and consequently, leads to the promotion of designers' knowledge and successful designed environments. The conceptual model introduced in this paper has been sketched using logical reasoning and a cultural-discourse approach. The model shows that users' perception and evaluation of environment is related to the aspects of environmental design and the level of mental, social, and well-being effects such environments have on users. The proposed model significantly differs from all the previous models introduced in the literature of Environment Psychology, in that it puts emphasis on the process of evaluation and regards it as a dynamic and repetitive behavioral process. As this model suggests, environmental satisfaction is one of the factors reflecting users' attitudes toward environment, which is expressed through spatial behaviors and influenced by users' perceptions and evaluations from physical features of environment. In this model, spatial behavior is regarded as a physical reaction to users' attitudes and the level of their satisfaction at environment. That is to say, spatial behavior can be considered as an observable index of users' perception and evaluation of environment, which is influenced by their attitudes.

Keywords: Designers' Conception, Built Environment, Conception and Evaluation of Environment, Environmental Satisfaction, Spatial Behavior.

INTRODUCTION

Failure in achieving optimum qualities in designed environments is indicative of a difference in designers' conceptions and predictions and the real outcomes of the designs as well. This prevailing difference is thoroughly examined in the literature of environmental design (e.g. Lang & Moleski, 2010; Bell et al., 2005; Gifford, 2007; Zeisel, 2006; Lang, 2004; Rapaport, 2012; Motalebi, 2001). Most of the authors and researchers believe that this problem, i.e. the difference in designers' conceptions and predictions and the real outcomes of the designs, rooted in designers' design procedure, can be investigated during the recognition process (Lang and Moleski,

2010; Bell et al., 2005; Michelson, 1968; Lang, 1987). As a matter of fact, it seems that designers have wrong conceptions and attitudes toward environment users. Such wrong conceptions may cause designers to attribute some irrelevant needs, values, and interests to users who really lack them. As a result, kinds of environments will be created that provides user's lowest expectations at best and would be intolerable for them at worse. As Hershberger (cited in Lang et al., 1974) pointed out such failures in designing artificial environments (such as Le Corbusier housing in Chandigarh, India; and Pruitt-Igoe urban housing project in the U.S. city of St. Louis) could have catastrophic consequences since an inefficient environment causes a great loss to users' satisfaction and

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evokes feelings of lack of security, isolation, and stress.



Fig. 1. Pruitt-Igoe Urban Housing Project in the U.S. City Of St. Louis (URL1- Wikipedia, 2013)

Regarding the approaches and issues raised in the literature review, it can be concluded that the best way to resolve the differences in the outcomes of the designs and get a good idea of how users utilize the capacities of designed environments is to understand man-environment relationship and the interaction between them. Moreover, literature of designed environments proved that designers' improper understanding of this relationship leads to wrong conceptions about the effects of built environments on users' behavior (Lang, 1987). Previous studies also showed that such relationship is influenced by users' individual characteristics and psychological processes, including their perception, recognition, and attitudes (Bonnes and Secchiaroli, 1995; Cassidy, 1997). Lack of proper understanding of users' conception and evaluation of physical features in environments creates wrong conceptions on part of designers and consequently, an undesirable environment. In other words, it would negatively influence the capacities of designed environments. Such environments are supposed to be qualified enough to meet users' needs and support their values. A great bulk of studies tried to warn designers against conscious or unconscious deviation from users' needs and values (Beck & Teasdale, 1978; Canter, 1977). However, Lang (1987) asserted that few studies have been done on the way users conceptualize and evaluate environments.

The present study highlights the way users conceptualize and evaluate environments as well as the deep understanding of man and environment interaction. Indeed, in line with what has been discussed so far as the main content and purpose of this study, the following research question is raised up: Is there any relationship

between the physical features of environment and users' perception and evaluation of the environment and their spatial behavior? Such investigation contributes to predicting users' possible behaviors in designed environments, and consequently, leads to the promotion of designers' knowledge and successful designed environments.

This is a theoretical study based on logical reasoning and a cultural-discourse approach to develop a conceptual model. The results of the study may be of help to understanding the relationship between the components effective on user-designed environment interaction. Therefore, the literature of the environment-behavior study has been comprehensively investigated to appreciate the nature of designed environments. In this line, the present research seeks to develop a conceptual model in order to scrutinize the way users' conceptualize and evaluate built environments and the impact of such conception and evaluation on their special behavior.

LITERATURE REVIEW

The environment-behavior studies investigate the interaction between human and environment and basically focus on individual's psychological processes of environmental understanding. Some processes such as perception, understanding, attitude, and individual characteristics are known as the basis of behavior, which will be elaborated in the next sections.

The Nature of Environmental Perception

Rapoport (1976, 1982) believed that individual and environment form a system in which there is



a mutual interaction between the environment and individual's behavior, which is determined by both physical environment and individual's perception and interpretation of the environment; the mutual interaction also influences individual's evaluation of the environment. In other words, environmental evaluation is based on an amalgamation of attitudes, environmental stimuli and individual's values. Environmental evaluation, in turn, affects users' perception of the environment, their activities, and reactions to external stimuli (Downs & Stea, 1973; Bonnes & Secchiaroli, 1995). Moreover, it was specifically claimed in the literature that three aspects of the structure of environmental perception, i.e. perception, understanding, and attitudes, as different steps of a process, must be examined in relation to each other rather than separately (Bonnes & Secchiaroli, 1995; Cassidy, 1997; Canter, 1977; Gifford, 2007). Studies done in the realm of Environmental Psychology on the differences between perception and understanding tend to expand upon this view. In a nutshell, users' perceptions of environment pave the way for developing their environmental attitudes and understanding. Such development in environmental understanding and attitudes creates some expectations which influence users' perceptions of the environment. The above-mentioned three psychological processes will be fully explained below.

The Process of Environmental Perception

Ittelson (1970, 1973) and Ittelson et al. (1976) have done invaluable studies on the process of environmental perception. He stated that as people are surrounded by environments, they need to move in it so that they can create a clear perception of the environment and utilize it effectively. Movement in the environment makes people's perception of environment more explorative than a simple observation (Ittelson, 1970). Fisher (1976) believed that for a precise spatial orientation, perception may entail visual, tactile, kinetic, and aural aspects. Movements (sharp turns, changes in surfaces, gradients, stairs and etc.) contribute to the integration of different senses over time. As the movements start, more senses engage in the process of perception. Rapoport (1977) considered perception as the most fundamental communicative mechanism of both people and environment, a general and universal process influencing all man-environment interactions. He stated that "Perception is always related to activity. Hence, it is in association with meaning and motivation. This is also a multi dimensional process which is not exclusive to simply central areas in comparison with incorporating the whole environment" (p. 178).

As Ittelson (1976) mentioned, environmental

perception provides people with the basic knowledge about environment, which is necessary for adapting their behavior with the environment. Appleyard (1970, 1973, 1977) conducted a study on urban perception investigating the role of environmental perception in helping people navigate their way in urban environment. Appleyard pointed out that many aspects of urban environment are comprehensible simply due to their practical usage. Ittelson (1976) believed that in a cultural context people's familiarity with some specific forms is closely linked to their perception of that environment.

The Process of Environmental Understanding

Environmental understanding is a process related to storing, organizing, reconstructing, and invoking mental images of environmental features which are not present in the immediate environment. Holahan (1982) considered the significant function of environmental understanding, special problem-solving and positioning capabilities, and finding physical and social resources to be necessary.

A great bulk of studies have indicated that people create mental image of their environment –referred to as environmental conception by Bornet (cited in Lang 1987) – which can be put together like a mental map (Lynch, 2006). Environmental conceptions are mental representations of realities created through direct and indirect experience, classification as well as combination of different environmental features. Many researchers claim that mental maps are simplified models reflecting spatial environment; they are also influenced by spatial behavior (Bonnes and Secchiaroli, 1995). As Gifford (2007) believed, environmental features embedded in such maps and their spatial variations are linked to the paradigms of spatial activities in the environment. According to some researchers, environmental conception or abstract perception of environment which we expect for our activities is the essential part of behavior planning (Bonnes and Secchiaroli, 1995). Kaplan (1973) and Downs and Stea (1973) are amongst those researchers emphasizing the importance of mental maps as a means of adapting human needs with features of built environment. It can be claimed that processing humans' basic information including recognition, prediction, evaluation, and action would become sustainable in light of environmental conception.

Environmental Attitudes

Environmental Attitudes are desirable and undesirable feelings evoked in users toward some perceived environmental features or any other issues related to physical environment. Allport (cited in Bonnes



& Secchiaroli, 1995) defined attitudes as “a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon an individual’s response to all objects and situations with which it is related”. Jahoda and Warren (1966) stated that attitudes determine what one sees, what one hears, what one thinks about, and what one does.

Holahan (1982) pointed out that people’s evaluative attitudes provoking an emotional reaction toward the quality of environment, are interpreted as their priorities and aesthetic motivations. Flachsbart and Peterson (1973) proved that people’s priorities are under the influence of

their sensitivity to what they were deprived of. Therefore, they tend to overestimate things they lack, which consequently influences their attitudes. Lang (1987) believed that motivations are closely linked to attitudes. He also asserted that attitude is a force guiding behaviors. Moreover, attitude exerts a great impact on some features such as personality, social class, values, culture and environment, perception processes, cognition, and spatial behavior. Such features not only affect individual’s perception, but also have something to do with how people think of environment as well as the way they use it.

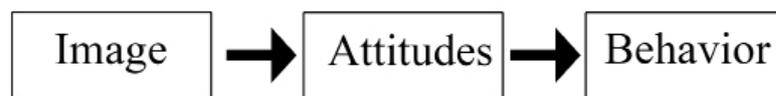


Fig. 2. The Relationship between Mental Image, Attitudes, and Behavior

Environmental Perception and Spatial Behavior

Processes of users’ evaluation of environment discussed in the previous sections indicate that spatial behavior is a response and function of users’ direct perception and environmental conception formed during cognitive processes, motivations, and attitudes (Fig. 1). Accordingly, Lerup (1977) said that people take action in environment; he also emphasized that people recognize the environment, categorize and interpret it, and finally form their thoughts on how to control different situations.

As a matter of fact, environment can be regarded as a context for human activities, which may restrain or trigger users’ behavior. However, it cannot determine their behavior (Canter, 1977; Rapaport, 1982; Lang, 1987). In this regard, Wohlwill (1973) highlighted the importance of environment with an emphasis on built environment; the reason behind his emphasis is not only people’s behavior and well-being which are influenced by built environments but also the environments being influenced by people’s behavior and attitudes. Indeed, behavior and environment form a mutually interactive system.

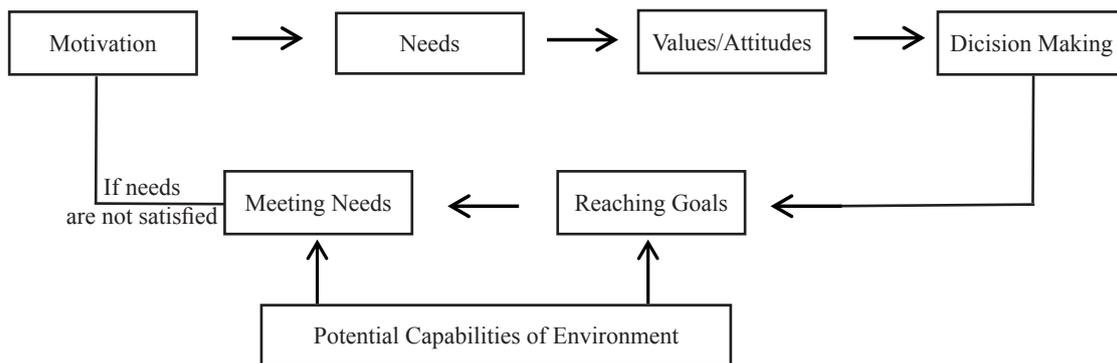


Fig. 3. Dynamic Model of the Relationship Between Motivation, Attitudes, and Behavior (Motalebi, 2001, p. 62)

Accepting Wohlwill’ viewpoint, it can be concluded that if spatial behavior is observable, it can be regarded as user’s active response to perceived needs. Proshansky

et al. (1970) expands in regard to this conclusion that all behavioral-physical, social, cultural components are defined through their mutual relationship, i.e. a change



in one component not only affects the other ones but also it would be affected by them, too. Therefore, it can be concluded that environmental changes influence behavior, consequences of which depend on the way people interpret such changes and the importance they attribute to them.

Behavioral Adaptation and Environmental Adjustment

During the recent decades, environment-behavior studies have sought to show that users try to adapt environment with their own needs, that is to say, they try to change the environment to fulfill their needs. It has been claimed in the literature that when a physical context prevents the related activities of reaching goals and does not support that, or when it fails to provide users' expectations, they resort to a vast range of activities to adapt the environment with their activities (Bell et al., 2005). Proshansky and his colleagues (1970) are one of those researchers believing if users have a high motivation for reaching their goals, they adapt their behavior with environmental features or change the environment to meet their needs. In other words, changing the physical context or the type of their relationship with this context and adapting their activities with environment, users try to organize their position in the environment.

Wohlwill (1971) considers adaptation and adjustment as strategies of behavioral reaction in environment. He distinguishes between these two concepts, i.e. he considers adaptation as an inactive reaction to environmental pressures or stimuli, in which users correct their behavior to adapt it with environment. As for adjustment, Wohlwill (1971) defines it as a reaction to

create an environment more compatible with users' needs, which may lead to some changes in the environment or its correction. However, Wohlwill's (1971) comparative model does not indicate that people have always succeeded in ameliorating the undesirable adverse effect of environmentally mental pressures.

Bell et al. (2005) believed that mental pressure can be considered as a process in which environmental demands or threats converts into mental reactions. The difference between demands or threats of physical environment and the ability of an individual to respond to such demands and threats can be so huge that even the greatest environmental adjustments fail to eliminate the undesirable social consequences of mental pressure. Therefore, as evidences show, if neither behavioral adaptations nor environmental adjustments are possible, a stressful situation would be created. In such condition, according to the field studies, users would rebel against the stressful situation, showing their disagreement with environmental imposition. This condition was observed in Pruitt-Igoe urban housing project in the U.S. city of St. Louis, Killingworth residential complex in England, and the other similar housing projects in all over the world. In most of the cases, residents refused to adapt their behavior with environment and finally exhibited a destructive balancing behavior or simply left the environment. Although environment pressure is a mental process, reactions to mental pressure include mental, behavioral, and physiological changes most of which are firstly related to adjustment processes (Bell et al., 2005). Tolerating mental pressure of environment has great effects on the way people use the environment; it also leads to a limited social interaction among users.



Fig. 4. Yamasaki's Sketch Depicting His Idea on Designing the Corridors of Pruitt-Igoe Urban Housing Project (Left) and Picture of the Same Corridors before Destruction (Right). (URL1- Wikipedia, 2013).



It can be concluded that the main concepts of environmental compliance is reflected in both physical changes of environment and correction of users' spatial behavior. Hence, two variables of spatial features of environment, i. e. "flexibility" and "adaptability" are of high significance. It seems that the extent to which an environment can welcome the physical changes in behavioral patterns is dependent on two factors, that is, the level of its flexibility to support such changes and the level of its adaptability to create different behavioral patterns.

Environmental Flexibility and Physical Changes

Flexibility of environment refers to its capacity and readiness to welcome users' effects (Turan, 1973). Therefore, the more an environment is responsive to changes, the higher flexibility it will enjoy. In his book entitled "The Death and Life of Great American Cities", Jacobs (1961) stated that cities which could survive and become sustainable are those physical design of which has been efficiently corrected through basic changes in activity patterns.

Changes created by users in built environments aims at changing the environment capability. Lang (2004) said that people needs change over time; thus, they continue to change physical environment so as to make changes in its capabilities. For instance, Gehl (2011) emphasized that a built environment is not a goal by itself, rather it is a tool made to be used. Therefore, although designing an environment would be interesting and creative, designers should always bear it in mind that they must provide different users with opportunities to try different options to create an environment compatible with their needs. Hence, it can be concluded that individual correction of physical environment could be an indicative of the positive interaction between individual and environment. Indeed, such interaction is an attempt made by users to make the environment more responsive to their special customs and life style. Sommer (1974) and Lynch (1960) are amongst those researchers believing that designers are to create a loose fit between form and function to enable users to try different options for creating an environment well-matched with their needs.

Environmental Adaptability and Behavioral Adaptation

An adaptable design is one which supports common behavioral patterns during different time periods, needless of making physical changes. Holahan (1982) asserted that during the process of environmental adaptability, users develop different strategies of behavioral adaptation to convert the adverse potential effects of undesirable

environment into more efficient human potentials (Bell et al., 2005). In fact, compatibility is a process through which users adaptively fit the physical context of their environment with their life style.

Failure in adaptability with environment is a crucial factor influencing attitude features. Holahan (1982) showed the negative consequences of poor behavioral adaptation during the analysis of adaptation processes. Altman (1985) stated that the main question is not "whether human is able to adapt himself with turbulent situation of environment", rather "what is the mental and physical consequences of such undesirable adaptation in long-term?". For instance, sustainability of some places may necessitate that people limit their interpersonal openness and sensitivity to cope with and adapt them to real constrain. For example, individual security in a disorganized and turbulent neighborhood may force residents to limit their social interactions and participate less in social issues.

In the present study, the process of environmental adaptability has been stressed in that users' evaluation of the effects of adaptive behaviors in relation to environmental functions is necessary for assessing the relationship between environmental features and the type of users' behavior. In other words, the extent to which the environment impacts on users' behavior should be taken into account. Moreover, understanding how users do behavioral adaptive and non-adaptive activities could contribute to perceiving the nature of spatial behavior and determining the extent of man-environment interaction.

Man-Environment Interaction: Activities and Behavioral Bases

Instead of examining the origin of structural shapes and forms, it is better to investigate their effects on users' behavior. In this regard, based on the studies mentioned in the related literature, the following general hypotheses are suggested and confirmed: 1) an individual's behavior is a function of his motivation, capabilities, and mental images. 2) Users may adapt their behavior with environment or adapt the environment with their own needs to provide a desirable functional and behavioral condition. Base on the above-mentioned hypotheses, the present study focuses on man-environment interaction. As Lerup (1977) mentioned, such interaction leads to "Uniqueness of Place". He also believed that usage of environment is the cause of man-environment relationship.

Generally, it has been confirmed in the related literature that the concept of behavior is multidimensional and often deals with individuals' various activities,



expectations, and experiences. Behaviors and activities would have a crucial role in understanding built environment as a system. Studies of activities would contribute to understanding people's life style and interaction with environment. It is believed that one of the main goals of environment design is to create designs which support users' activity patterns to meet their needs and expectations (Lang and Moleski, 2010). Lynch and Hack (1984) pointed out that physical context must be designed to fit the specific activities which are in line with men's needs. Maslow (1943, cited in Lang, 2004) enumerated human needs as shelter, security, attachment, respect, self-actualization, and cognitive and aesthetic satisfaction.

According to Rapaport (1982), usage of physical context depends on the extent of their adaptability with users' needs as well as specific and complementary activities which have been limited in the other environments. Also, Appleyard (1977) added that when people are involved in different activities, they have environmental needs and therefore try to maintain the environmental values. These needs and values necessitate specific qualities of environment, especially the ones important for environmental perception or those which fit the conceptions of environment. Therefore, the concepts which seem to be closer to the purposes of environmental design and provide a framework for design and environmental analysis on the basis of human needs are amongst those mentioned in Barker's analysis and activity systems of place-behavior (Lang, 1987).

A behavioral context or a behavioral sitting spatially refers to an ongoing behavioral pattern that repeats in regular intervals in a finite position, in which space and behavior can be regarded as a whole. Every large environment can be divided into array of spatial and temporal units; also they can be identified and separated easily using some specific processes. Therefore, the quality of human actions and interactions could be described on the basis of behavioral sitting which feature sustainable pattern of purposeful human behavior and interacts with a special physical context. Activities are somewhat self-regulating in a behavioral sitting. Activities also adapt themselves with environment and meanwhile change the environment to preserve themselves (Wicker, 1979).

According to Barker's (cited in Lang, 1987) definition of behavioral sitting, it is a consistent composition of activity and place incorporating an ongoing activity, specific design of environment, consistent relationship between activity and environment, and a specific time period. That is to say, a similar physical context may be something more than a behavioral context, providing

different behavioral patterns occur in different times in the environment.

THEORETICAL FRAMEWORK: DEVELOPING A CONCEPTUAL MODEL

Sketching conceptual models in the realm of environment-behavior studies aims to reach two main goals as follows:

- To show how various variables such as people, their activities, emotions, as well as environmental contexts are linked to each other.

- The proposed models could be used as an integrated framework for gathering and analyzing data systematically in experimental studies.

In the literature of environmental psychology, several conceptual models were proposed for examining the effects of physical environment and physical context of places on users' perception and behavior (Marans & Spreckelmeyer, 1981; Holahan, 1982; Marans & Rdgers, 1975; Gustafson, 2001; Bell et al., 2005; Gifford, 2007). Despite the existing differences, these conceptual models either directly or indirectly link the physical features of environment to users' environmental perception and evaluations. They also show the relationship between the effect of environment on users' behavior, satisfaction, and well-being as well. One of these recognized models is that of Bandura, which has been sketched using interaction approach; it is also in contrast to the traditional model of environment-behavior (cited in Bell et al., 2005). Traditional models propose that each environmental and personal elements separately affect behavior. However, Bandura's model shows the simultaneous interplay between environmental, personal, and behavioral components (Fig. 5).



Users' Evaluation of Environmental Functions

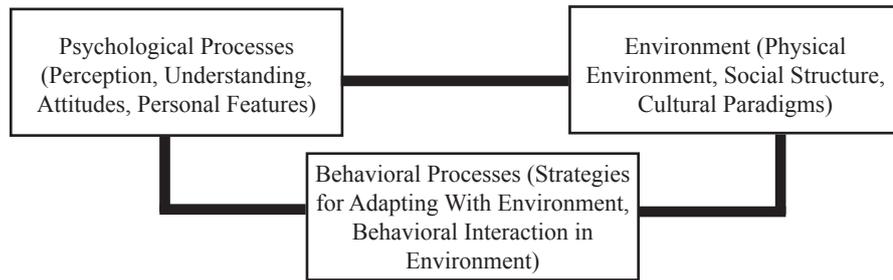


Fig . 5. Bandura's Model of Mutual Interaction (Bell et al., 2005)

Base on Bandura's Model and its development through the outcomes obtained in review of the related literature, a new model can be proposed. Fig. 4 depicts the proposed model of the present study, in which user's expressed satisfaction is related to his evaluation of physical features of built environment. Therefore, it depends on environmental perception, as well as all the standards and criteria by which the environment has been judged. In this proposed model, individual characteristics were considered as influencing users' perception and evaluation of environmental features. This model shows the way environmental features or condition were linked to the experience of its residents. Furthermore, it indicates that people's emotion toward built environment is linked to their evaluation of numerous environmental features existing in the context. Also, users' spatial behavior may be directly influenced by their sense of satisfaction with the environment.

The significance of the proposed model is to determine the needs to real evaluations of physical environment. The model shows that users' perception and evaluation of environment is related to the level of mental, social, and well-being effects such environments have on users. This can be categorized as behavioral evaluation. As the model suggests, environmental evaluation is done through objective measures of functional and

behavioral elements. Accordingly, functional elements of environment are those directly influencing (supporting or preventing) the activities within the environment; such elements should pave the way for organizing man-environment relationship and meet all the needs of this process, both qualitatively and quantitatively. Behavioral elements linking users' activities and satisfaction with physical environment deal with their perception and mental needs as well as the interaction between these factors and environment facilities.

The conceptual model of the present study seeks to investigate the functional elements influencing user's behavior in environment. As it was mentioned in the review of the related literature, this issue depends on the interaction between environment, users' activities, and the behavioral elements influencing the mental and social aspects of users' satisfaction and well-being. However, given that spatial behavior can impact on physical environment and consequently on its features (through utilizing spaces, adaptation, and regulation), it can be concluded that the need to establish a link between behavioral outcomes and environmental features is inevitable and it must be done explicitly; this confirms the relationship between environment and behavior (Bandura's Model, Fig. 5.).

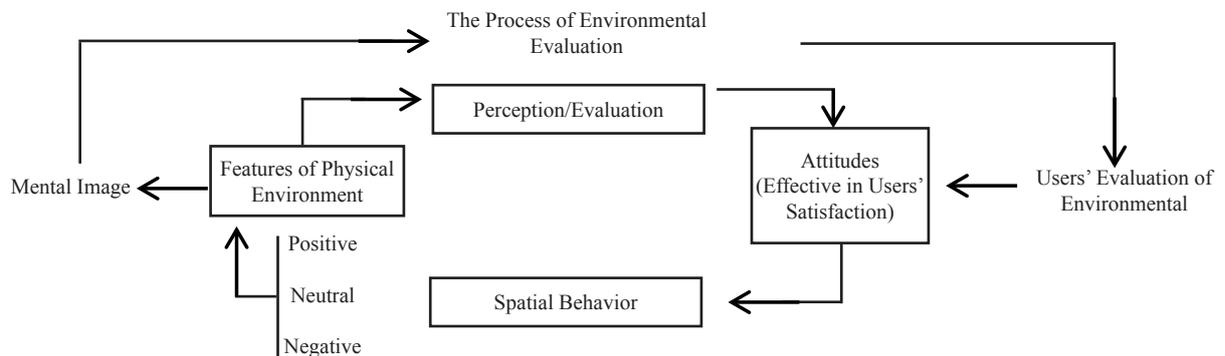


Fig. 6. The Proposed Model for Perception and Evaluation of Designed Environments



The main difference between the model proposed in the present study and the other models existing in the literature of Environmental Psychology is the emphasis on evaluation as a dynamic and iterative behavioral process. Furthermore, the model suggests that environmental satisfaction is one of the factors reflecting users' attitudes toward the environment, which is expressed through behavior. Therefore, behavior was regarded as a physical response to user's attitude toward and satisfaction with environment. That is to say, behavior can be considered as an observable index of user's perception and evaluation of environment.

CONCLUSION

The present study aimed at scrutinizing users' perception and evaluation of environmental functions. In the light of the theoretical framework of the study, users have active roles in environment. In other words, users and environments have been considered as integrated factors forming and affecting each other. As it was mentioned earlier, systematic examination of different aspects of spatial behavior entails many rules and it can be claimed that users resort to different policies to adapt themselves with environment. The present paper highlighted the concepts such as environmental adaptability and flexibility as well as the way users adjust environment to their own needs, goals and values.

Given the conceptual model of the present study, users' satisfaction can be considered as a yardstick for responding to what is called acceptable environmental quality. The advantages of this yardstick are clearly beyond including economic and social standards or even the other standards in environmental evaluation. Therefore, it seems rational to come to the conclusion that the higher the number of users satisfied with environment quality is, the more successful the environment will be. This is in line with Gifford's (2007) findings that users' satisfaction with built environment is an important criterion for evaluating and assessing the quality of environment.

Although the issue of satisfaction has been increasingly used in Environmental Studies as the basic criterion for environmental quality, the present study comprehensively and theoretically investigated the authenticity of this criterion for evaluating the quality of environmental functions. Needless to say, users' responses may be biased or there might be subtle differences in their perception which would lead to incorrect responses in the process of environmental evaluation. Therefore, individuals' psychological characteristics as factors affecting their

perception and evaluation must be taken into account. Thus, it seems that the main issue to be discussed is the question "Which criterion is the best for determining valid evaluation indexes of users' environmental satisfaction?"

According to the proposed model of the present study, spatial behavior can be considered as a basic criterion of satisfaction and environmental evaluation. Complexity of spatial behavior as an objective response to environmental stimuli includes a great deal of information which can be used in environmental evaluation.

All in all, it can be concluded that activity patterns are of two features: First, users' psychological characteristics which are often taken into account in terms of social, economic, and demographic specifications and have deep effects on the structure of behavioral patterns and second, capabilities and physical features of environment which influence users' spatial behavior.

As it was shown in the proposed model, spatial behavior and physical features of environment could be closely linked to each other. Based on the results of the review of literature, users' emotion and perception of built environment impacts on the way they use the environments. On the other hand, the usage of built environment (and the level of users' expressed satisfaction) influences their evaluation of the environment. Thus, in this model evaluation of users' attitudes toward their level of satisfaction with physical features of environment is regarded as the criterion of assessing environmental functions. It is well worth mentioning that validity of the proposed model needs to be tested through conducting separate experimental researches.



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