

The Impact of Indoor, Outdoor and Urban Architecture on Human Psychology

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Abstract The connection and exchange between the architectural plan and human brain psychology are noteworthy. However, they still persist largely unnoticed or overlooked both within and outside the architectural design field. Thus, this paper presents a discussion on the relationship between architecture and psychology from indoor to outdoor and urban level. The paper begins with a brief discussion on the architecture psychology and indoor spaces. Next, the paper proceeds to discuss the psychology of building's exterior. The paper then presents a discussion on psychology and the design of city buildings. Thus, based on the discussion, the paper has found that the connection between architecture and psychology is not only noteworthy; it is related in two directions. From one point of view, the effective structure of architecture appears to have clear mental and physiological effects. On the other hand, in terms of psychology, human experience on the architecture design, and the capacity of neurological frameworks, all assume a remarkable role in determining a person's psychological outcome.

Keywords Architecture, Psychology, Design, Users, Geometry, Building, Mental Health

1. Introduction

Architecture is unique in creativity and art, and must always reflect the era and cultural background that produced it [1]. Designing and constructing buildings requires time, money, and the cooperation of financiers, citizen officials, builders, architects, and etc [1]. Moneim [2] claimed that the natural environment is considered the main source of many human experiences. The way the designer organizes the built environment should consider the effects of radiation and ambient light, temperature, sound, smell and mechanical contact [2]. He also pointed out that the user's behavior, thoughts and feelings are to some extent related to the interaction with the design environment. The basic process of human behavior towards the environment is shown in Figure 1.

Architectural psychology can perceive the significant impact of the design environment on human experience and behavior, and help understand the relationship between humans and human design and the impact of the environment [4]. Architectural psychology is the discipline of human involvement and performance, especially in the context of human design or influence [4]. By examining the interrelationship between the discipline of human involvement and performance, as well as the spatial dimension of human creation or influence, the intention is to support human well-being on the one hand, and the continued existence and protection of the entire ecosystem [4].

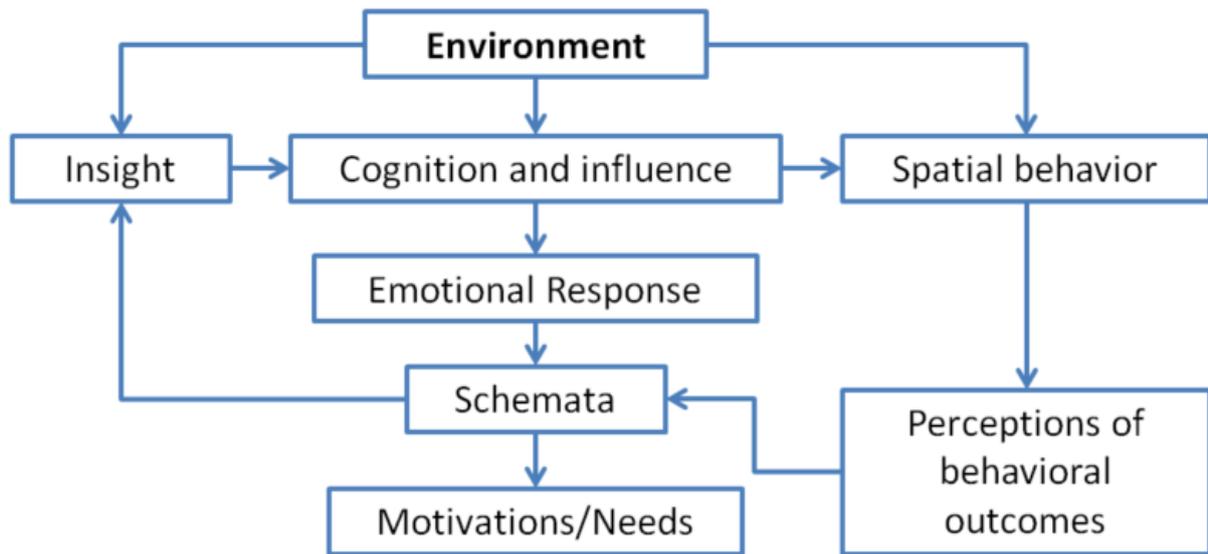


Figure 1. The Fundamental of Human Behavior towards the Environment [2, 3]

Dynamic characteristics are necessary for the potentially rich collaboration between architecture and psychology [4]. The more psychological methods are used to explore and test the creation and design process of architecture, the more potentials of architectural psychology can be discovered [4]. Architectural psychology must first deal with the creation of buildings, and then mainly deal with the design process, in order to have an ideal impact on architectural design and go beyond the reflection of the existing environment [4].

The design of residences, office and recreation space must have the most positive impact on people and their common lives. Margarete [5] pointed out that some shortcomings of the architecture can affect the health of users, such as psychosomatic symptoms, and even cause physical discomfort. Next, she added that the spatial structure is also related to safety and security issues, because certain designs will attract crime, but will also provide safety and improve safety [5]. In addition, from a positive perspective, space helps to enhance the user's sense of self-esteem and satisfaction. Unfortunately, this deficiency can lead to dissatisfaction, irritability, alienation and listlessness. The layout, equipment and size of the space and its design will affect the movement and usage patterns of human beings [5]. At the same time, the structure that supports daily life makes users feel comfortable.

The environment affects people's psychological and emotional state, and the structure and layout of buildings have a profound impact on people, because the architectural space has a special impact on people's lives. To create a human-oriented design is to strip away the complex layers of human ideals, desires and motivations. The value of psychology in architecture is always unexpected. Winston Churchill claimed that "We shape our buildings, and afterwards our buildings shape us" [6].

In order to establish a clear connection between architecture and personal psychology, architects must find out the client's requirements for space, their favorite colors, the style of furniture that suits their lives, and other things that help meet the client's psychological needs [7]. In addition, the materials used in the building, the furniture used and displayed, and the co-creation of the atmosphere will affect the psychology of users and their working methods or their reactions to surrounding events [7]. A person's psychological characteristics determine the attitude, and the architect must understand the preferences of the client before attempting any design work, so as to solve this psychological problem [7].

Humans all live in architectural homes, offices, buildings and structures [8]. Eighty to ninety percent of people's lives are spent indoors, surrounded by colors, soundscapes, furniture, artificial light, and forms [9]. Due to the COVID19 pandemic, employees have been working from home longer than before the pandemic. As a result, the impact on their mental health is reported, such as feeling depressed, anxious or exhausted after working from home during the pandemic [10]. Therefore, their mental state and emotions will be affected by the environment in which they live most of the time [7]. However, studies have shown that inferior and ill-conceived factors, as well as other architect-related factors, stimulate psychosomatic illnesses, encourage exhaustion, and facilitate stress and physical anxiety [11]. On the contrary, excellent and well-designed architectures can enhance the well-being of the occupants, including good moods, healthy social well-being, health and success in all their efforts [12].

These psychological effects are not immediately felt, but take a few months or years. This means that spaces are given to promote people's well-being and to support their healing processes [11, 12]. There is a relative need for a new study called architectural psychology to deal

intensively with issues related to the impact of architecture on people's psychology. The aim of the study is to explore the impact of architecture on people, their behavior and their feelings. It also seeks to make recommendations on the design and planning of buildings. This study focuses on the impact of indoor and outdoor spaces on the emotional, social and cognitive behavior of individuals. Therefore, this paper presents a brief discussion on the relationship between architecture and psychology from indoor to outdoor and urban level.

2. Architecture Psychology and Indoor Spaces

Cities, houses, businesses and buildings should be constructed for their inhabitants. Architecture generates psychological and physiological well-being [13]. Before any design has been made, it has now become an essential theme of architects. According to Coburn et al. [14], when a home is painted in a dull color, it is most likely that the occupants will experience a bad mood after spending a few months in that building. It may not be surprising to find that each of them has some degree of stress even when the cause is unknown [15]. Different people are affected differently by architecture. Thus, while a specific color may well reflect on some people's emotions and physical well-being, it may adversely affect others [15]. For example, to avoid these kinds of effects, libraries are a comfortable, engaging and exciting place to spend one's time. Those in a spacious room with full windows that allow the community to communicate with the outside are likely to trigger positive moods, emotions, and physiological effects [15], as shown in Figure 2. They are still separated from the outside world. On the contrary, a library that is squeezed and has a small window that does not allow connection to the outside world is likely to promote stress and other adverse feelings.



Figure 2. Example of spacious place

In addition, according to Porter and Mikellides [16], the building can have an impact on the health of the individual.

Offices are built to be occupied by a lot of people. It is essential to determine how it is designed to minimize the chances of having a negative impact on the health of many people. Moreover, there is a need to connect the occupants of the building to the outside world even if they are separated. People need to be emotionally, physically and cognitively healthy to achieve happiness [16].

External architecture means the architectural style and the general arrangement of the exterior of the building, but it is not limited to that. It also includes the texture of the building materials, the style and type of all windows, doors, porches, roofs, foundations, signs, landscaping, fences and also fixtures, features and details. Furthermore, exterior architecture is a very important stage of the process, because it is the relationship between the building and the environment around it, and it also prepares people for what they will have, see and feel [16].

The office building with a row of gorgeous windows is not only a beautiful landscape, but natural light can also enhance the mood and improve work efficiency. Good design, plenty of natural light and low compartments allow everyone to enjoy the sunshine, which really helps people work better and sleep better at night. Building designs that encourage natural light can improve the quality of work and a healthier circadian rhythm. The built environment should consider what is healthier for people. These modifications and improvements are beneficial to users, because buildings affect behavior, and people adapt and react to their surroundings.

At the design stage, the designer must keep in mind the strong relationship between the exterior and the interior of the architecture [17]. The exterior has to be a mirror for the interior; it is about how the building makes people feel. Therefore, the designer has to design according to the senses and by this he can control people's behavior. For example, if the visitor feels a breeze because of the location of the building, he also wants to experience the same thing when he gets inside to have a full image and experience. In other words, the designer must link the exterior to the interior.

3. Psychology of Building Exterior

The exterior design of any building gives an individual an impression of the first site when they visit a building (Figure 3). This is very important as the building acquires its eye-catching nature by how impressive it is from the outside [18]. The nature of the building from outside will allow us to get a clear view of what the users expect from inside the building. The building must have eye-catching features outside so that even when users have to spend some time outside the building, users can tell the comfort that is outside the building. Plants such as grass should be there where anyone would sit and relax and want some fresh air outside. At the same time, there should be trees that provide a good shade to avoid direct sunlight. Apart

from that, the building surrounded by trees will help to break the wind, which could cause damage to the building [18]. The exterior of the building should be equipped with enough lighting to make it possible to see clearly when it is dark. Light from outside will also act as a sense of security for the building, as someone from inside the building will be able to see every activity going on outside. The exterior of the building should also be painted in bright colors that will be attractive even to the people passing through the building [19]. This will definitely notify the user that the interior of the building is even more attractive. It will give the occupants of the building the courage and comfort to relax outside the building if the temperature inside is not favorable [19].



Figure 3. Exterior design of a building

4. Psychology and the City

Bond [20] emphasized that urban architects usually pay little attention to the potential cognitive impact of their creations on urban residents. Designers often ignore the necessity of designing unique and personalized things, and the influence of the behavior of the people who coexist with them [20]. Some old urban structures are gradually transformed into unstable residential areas [21]. Many studies have shown that people who grew up in cities are twice as likely to suffer from schizophrenia and increase the risk of other mental illnesses such as depression and chronic anxiety [20]. Therefore, urban design is important to feel good aesthetics. In addition, the widespread use of automobiles stems from urban networks and land use patterns [22].

The city is a very important part of a country where most people crowd together with a variety of reasons, some of them doing their business, others taking it as their home, others visiting it, and others are just part of the city from its beginning [23]. The city building should be given very serious consideration as it has its own identification, which makes it different from other cities in the country. The city must have a feature that will allow visitors from outside to identify it even though they are not familiar with it [24]. In

most cases, city designers ensure that they have structured some landmarks that are set very high at locations that can be identified from a distance so that when visitors come to the city, they can see that this is the city they want to be in [24]. This helps to avoid confusion for those who are not familiar with the city. The city, which has attractive and modern structures, will always attract foreign investors as well as tourists, which will help the government increase its foreign income. A city with modern structures will always describe the nature of the country's governance (Figure 4). It shows that the country governance responsible for the development of the city is at work. The government should always ensure that the conditions of each city are kept up-to-date every time changes are made to the design of the city.



Figure 4. Example of Modern Structure

Some of the factors that will make the design of a city comfortable include scale, style and form. In terms of style, the size and scale of the city matter a lot [24]. This is because the city is a modern area where most people want to settle in search of jobs and others who run their businesses. So there is definitely a lot of congestion in the city. Congestion is a very harmful aspect of a city, since overcrowded can cause environmental pollution that can lead to contagious diseases for people around the city. Therefore, the city's designers should ensure that the city has enough space to accommodate as many people as possible [25]. In the event of congestion, the designer should consider increasing the space in the city. This will allow rapid free movement around the city and increase the productivity of the activities carried out in the city.

In terms of style, the city should be designed in a style that attracts people from outside the city. It should be equipped with modern features that will make it look modernized [25]. Buildings should be painted in bright colors that will brighten the entire city. Moreover, proper lighting systems should be installed in such a way that the city can be bright and facilitate activities even when it is dark. In order to avoid the destruction of property by wind, the city should have enough plantations to stop the wind from entering the buildings in the city. Furthermore, in terms of form, the city should be designed and built in an attractive manner. This will give the city's visitors a sense of comfort and belonging [25]. The city should be kept clean in order to make it attractive and also to prevent

diseases that may be caused by the unhygienic state of the city. In addition, industries should be located in places separate from people's locations so that people will not be affected in the event of any pollution.

The industrial revolution will reorganize the world according to the reasonable standards of machine production, which will inevitably give birth to modernism, which uses mass-produced steel and glass to replicate this emerging order in cities [1].

5. Conclusion

All in all, architects or designers should master the background and relationship between architects and psychologists in order to establish methods and skills to construct better buildings. There is significant connection between architecture and psychology. In terms of architecture, the interior and exterior design of the building will determine the comfort of the occupants of the building. Hence, the designers should ensure that the buildings are built in such a way as to satisfy the wishes of the occupants. By doing so, the occupants' value of production will increase, thus maximizing good results. Furthermore, the health of the occupants will not be at any risk as they will have the best environment in and out of the building. The city structures should also be considered in such a way as to give the visitors of the city an attractive appearance. In addition, proper lighting systems will improve productivity and safety in the city. So as to ensure that the desired psychology for building users is maintained, it is necessary to consider every aspect of the foundation and to ensure that users have the right quality plan in order to produce the best suitable designs.

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