



# **An Investigation of the Effect of Environmental Security Component on the Mental Health of Citizens in Urban Spaces: A Case Study of Janbaz Square in Mashhad**

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## **Abstract**

The crisis of unsuitability of urban spaces threatens the mental health of citizens in mental dimensions. Lack of security in urban spaces is one of the factors influencing such a crisis. In such circumstances, it is necessary to adopt new approaches to urban planning to promote the environmental health of citizens. Environmental security is one of the mental health components in urban spaces. Optimal and practical design of built spaces will reduce crime occurrence and increase security in urban spaces. A safe urban space encourages appropriate activities and threatens inappropriate ones. By increasing the presence of citizens and their supervision over conditions, the observation by others will be possible, the level of social interaction will increase and the security will enter the environment. The research method of the current study is analytical-interpretive and it has been carried out through a field-based survey. In the first step, the criteria for assessing the impact of security on the mental health of citizens in urban spaces were extracted from reliable internal and external sources and then, using a questionnaire, people's opinions were collected (n = 150). The data of the questionnaires were entered in SPSS software. Based on the exploratory factor analysis technique, the variables were classified into 5 factors explaining the feeling of security, including: noise pollution, favorable green space, lack of blind spots, amenities and lighting. Then, using Friedman test, Pearson test and T test, the relationship between the five factors and the feeling of security in the field was measured. It was found out that the most effective component in mental health is favorable green space, and lighting has the least effect on mental health.

**Keyword:** *Environmental Security, Health, Mental Health, Urban Space*

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## **Introduction**

The World Health Organization in its latest statements in the last decade examined the issue of health from four basic dimensions, namely, physical, psychological, social and spiritual dimensions. The central part of health is mental health, and health does not make sense without mental health. With higher mental health, we will definitely have more satisfaction with our lives, and our individual and social functioning will be better; A person with high mental health is satisfied with his work and life, uses his time usefully, enters into understandings with others and values and respects people's feelings and emotions. Such a person could be kind, love others, adapt to others and to be compatible with society (Abron, Qaraei, 2018). Urban public spaces, as a center where different segments of the population are present, need to be consciously designed in a way that satisfies the audience. One of the criteria for providing citizens with comfort in such spaces is the

promotion of environmental security. Security, as a psychological factor, adds to the appeal of urban space and makes it a safe place for the manifestation of civilization. Admittedly, environmental security is not always affected by crime and behavioral disorders; Rather, it sometimes creates a sense of insecurity by portraying an unfamiliar and stressful environment in one's mind. (Izadi & Haghi, 2015) Given that security in turn is one of the most important urban issues and also due to the expansion of various cultural, economic and social activities in the field of public places, it is necessary to pay attention and give importance to the issue of security in such spaces where more citizens are present, because security is directly related to people's mental health. Therefore, paying attention to the improvement and desirability of these environments is felt as an important need, and establishing security in the urban structure, as well as paying attention to the priorities for increasing the mental health of citizens regarding the promotion of their sense of mental security in the city are important issues, which become possible in the urban planning decision-making process. This study assumes that the environmental security of urban

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spaces affects the level of mental health of citizens and in order to test this hypothesis and explain this relationship, first, while reviewing the relevant literature, the correlation between the environmental security of urban spaces and the level of mental health of citizens is tested, and then by summarizing the variables using heuristic factor analysis in the form of urban space security factors, and with the help of Friedman test, Pearson test, and t-test, a model for explaining the relationship between the dimensions of environmental security and the level of mental health of citizens is presented.

## 2. Theoretical Foundations

### 2.1 The Concept of Health

Health in its general sense is among the words whose definition has significant differences in different professions and even between different people. Perhaps the main reason is the constant relationship of this concept with all human beings in all circumstances (Sam Aram, 2012: 1). In a broad sense, health is considered as a high quality state of the human body that expresses the proper functioning of the body and a certain genetic and environmental condition. But in a more concise sense, which is also more useful for the purposes of measurement, health is defined as:

a) Lack of clear evidence of the disease and normal functioning of the person, i.e. within the limits of changing the standards of accepted health criteria for a specific gender, age, community and geographical area, b) Adequate working of several organs of the body, in relation to each other, which is a sign of a kind of balance or stability of the body (Park, 2005: 35). In general, the best and most accepted definition of health is the definition of the World Health Organization, which is: "Complete physical, mental and social well-being and not only the absence of disease or disability."

### 2.2 The Concept of Mental Health

The World Health Organization defines mental health as "a state of health in which individuals are able to realize their abilities, can cope with the normal stresses of life, are productive, and have the ability to contribute to their community" (Hakimian & Mazhari, 2019). In other words, mental health can be considered as the ability to grow and develop intellectual and spiritual emotions, communicate with others, participate in collective activities, and flexibility when facing difficulties (Abron, Gharayi & Tabatabaian, 2018). The city is an organic, vibrant and dynamic system that needs a suitable quality of the urban environment to ensure the health of its residents and maintain its survival. In the field of urban planning and design, the concept of environmental quality has been one of the most widely used concepts and in this regard, several studies have been conducted (Salehi & Zarei, 2015). In defining the concept of environmental quality, several definitions are provided: A high quality environment brings a sense of

well-being and satisfaction to individuals, which is created through physical, social or symbolic indicators. In numerous studies, items such as accessibility and interconnectedness, comfort and landscape, applicability and activity, sociability, quality of environmental sustainability, quality of city landscape, quality of views, quality of city form, quality of form of buildings, and quality of public areas have been mentioned as the main components in explaining the quality of the environment (Carmona & Punter, 2013).

### 2.2.1 Mental Health from the Perspective of Theorists

Reber (1996) Dictionary of Psychology uses the term *mental health* to describe people who are at the highest level of behavioral activity, emotional adaptation, and behavioral adjustment, and is not used only to mean that a person is not ill (Marquez & Wood, 2007). There are two main definitions of mental health. In the first definition, mental health is a field of public health that works to reduce psychological illness in a community, and in the second definition, mental health means mind health, demonstrating a positive state of mind and mental health that in turn can help to create a valuable system of dynamicity, progress and development at the individual, national and international levels (Manavipour, 2012). Larus Cultural Mental Health defines mental health as follows: "Mental talent for pleasant coordination and effective working, and for difficult situations, and the flexibility to regain balance and to be able to do things (Ganji, 2004). According to Ginsburg, mental health is the mastery and skill in communication with the environment, especially in three important areas of life, i.e., love, work and recreation. Karl Menninger defines mental health as "the adaptation of the individual to the world around him as far as possible in such a way that leads to happiness and a fully useful and effective perception". Watson, the founder of the school of behaviorism, says, "Normal behavior is a diagram of the healthy personality of a normal person, which makes him adapt to the environment and makes it possible for him to meet his basic and essential needs" (Azizinejad, 2014). Gay et al. (2010) also defined mental health as "the mental capacity to work harmoniously, pleasantly and effectively in difficult situations of being flexible and self-balancing assessment". Sohrabi (2000) defines mental health as "a situation in which a person uses his potential ability to perform personal and social tasks, and as a result, he has both acted on his inner talents and been able to live with the community." Shamloo (1999) defines mental health as "a set of factors that play an important role in preventing the development or progression of the worsening trend of cognitive, emotional and behavioral disorders in humans" (Manavipour, 2012). As defined by the World Health Organization, "Mental health falls within the general concept of health, and mental health means the full

ability to play social, mental, and physical roles; health is not just the absence of disease or retardation (Ganji, 2000).

### 2.2.2 Components of Urban Environment Affecting Mental Health

Studies show that being in an environment designed by natural elements is effective in relieving stress and reducing mental fatigue (Matsuoka & Sullivan, 2011). Some other studies indicate that living in homes far from necessary facilities, is a cause of stress; conversely, having the necessary facilities in the neighborhood causes residents to experience a higher level of psychological comfort. According to studies, commuting to and from poorly maintained, dirty and polluted buildings can cause psychological stress on their users. Natural light has a direct effect on the activity of parts inside the brain. According to studies, natural daylight has a positive effect on positive psychological feelings (McAndrew, 2008). According to studies, noise pollution can cause disorders such as mental and physical fatigue, stress and anxiety, anger, high blood pressure and so on. Fear of the crime occurrence and feelings of insecurity create many mental and psychological problems for people. Traffic quality and safety in urban areas is known to affect the people's mental health and well-being. The architectural features of the environment can help strengthen people's mental health by providing the conditions for experiencing a higher level of social support. Numerous studies have shown that attachment to the place of residence has an effective role on mental health, individual behavior and social functioning of residents (Dannenberg & Frumkin, 2011).

## 2.3 Security

Security literally means to have no worry and concern. Security is the guarantee and provision of livelihood by making the necessary measures and arrangements. The Oxford Dictionary defines the term as follows: "The state of feeling happy and safe from danger or worry" (Khozairi, Mazhari, 2015, p. 70). Urban security has distinct dimensions that are derived from social, cultural, economic, political, and religious concepts in the city structure (Bemanian, 2009: 62). But security and a sense of security are two different categories. Security is considered the objective dimension of the issue and the sense of security is as its subjective dimension. The category of insecurity from the objective aspect includes all its manifestations such as theft, murder, violence, etc. And subjectively, it involves judging about the security of the area and space. Reacting to the fear of being victimized causes many people to avoid danger or at least reduce their risk exposure, and this in turn can lead to people being absent not only in a particular place but in most public spaces (Khozairi, Mazhari, 2015 p.70). According to Needs Theory in the Maslow's hierarchy in 1968, security is considered one of the essential and

basic needs for human elevation (Eliaszadeh Moghadam & Zabetian, 2010, p. 44). Security is a concept that has both subjective and objective dimensions. Objectively, security means creating safe conditions for the protection and promotion of fundamental values and national life. Subjectively, security means feeling safe, and it is directly related to the mentality and the perception of people and the government of vulnerabilities and security threats (Nazari, 2010, p. 39). Crime is said to be one of the main issues threatening the quality of urban life, so people avoid places where there is a risk of personal and life danger. Meanwhile, "crime prevention through environmental design" is based on this assumption that the crime rate can be reduced by the proper design of the environment, as well as improving the quality of life. The basic idea of the impact of spaces on violence and the prevention of violence by changing the environment was first conceived by Newman and Jacobs. The whole purpose of the idea was to control the crime before controlling the criminal. Researchers' eyes were focused on physical spaces and the relationship between space and crime has been the main issue (Izadi & Haghi, 2015, p. 7). In other words, if the environment is designed in a way that can improve the supervision of individuals over conditions, increase the sense of belonging of its inhabitants to its territory and create a positive image of space, criminal opportunities will be reduced and criminals will be prevented from committing crimes (Cozens et al, 2005, 328). The diagram below shows an example of a classification of crime prevention factors through environmental design.

### 2.3.1 Security of Urban Spaces

In fact, the fear of crime in a society as a cause of hypocrisy is a problem greater than the crime itself. People often avoid places where they feel threatened, harmed, and generally insecure, and these environments are gradually abandoned. Although they were not really insecure in the beginning, they are now really becoming places for abuse and criminal activity. Thus, creating an environment that attracts and encourages people to walk (without fear or insecurity) actually increases the number of observers, and this popular force acts very strongly for the security of the people themselves and promotes the quality of life in that environment (Eliaszadeh Moghadam & Zabetian, 2010, 46). Repetition of familiar landscapes in urban public spaces not only eliminates the feeling of homesickness and anxiety, but also helps people find the correct route and minimizes the possibility of getting lost and the resulting fear. In addition to creating familiar places and spaces, this issue can also be achievable in the form of urban furniture with familiar styles such as benches and buckets, telephone kiosks and bus stations, etc., which are among the extensions to the environment. Of course, using familiar styles does not mean rejecting modern and innovative designs, and in fact, the important point

is to combine familiar and new styles in a way that could be understood and used by people (Izadi & Haghi, 2015, p. 8).

### **2.3.2 Security Analysis Indicators in Urban Spaces**

Indicators are the most basic measurement criteria and the most vital signs and indications of the condition of a society. The indicators of sustainability and unsustainability in cities, which are based on the quality assessment indicators of the urban environment, are key factors which are based on three key human needs, including basic needs (biological and physiological), socio-economic needs and cultural-artistic needs, respectively, (Salehi Amiri, Khodaei & Poor Kheiri, 2011). But the issue considered in the scope of this study is the functional, physical and environmental indicators affecting the increase of urban space security. Criteria for recognizing and analyzing security in the city are different and fluctuate according to physical (spatial), functional, and environmental-behavioral (mental) indicators. Each of these indicators is divided into criteria that are mentioned below.

#### **A. Physical (Spatial) Indicator:**

Urban space and the relations established within it are interrelated and affect each other. Through socio-cultural relations, human beings give form, function and importance to the space, and organizing the space, in turn, leads to the transformation of these relations. Therefore, the construction and design of urban spaces affect the process of social life and should physically and psychologically be efficient for citizens (Sifaei, 2015). The legibility of a city is revealed through physical tools, and to the extent that a physical tool can create a symbolic relationship with its citizens through physical features, the city is considered as legible or illegible [8]. Modernists believe that physical spaces can change people's behavior, i.e., with special design of physical environment, certain behavior can be facilitated and encouraged in citizens. The public space is one of the places that attract large groups of people, so it must provide the right conditions for its users to provide psychological security in addition to physical safety.

#### **B. Functional Indicator:**

When a comfortable public space manifests itself well and has a good image, in fact, these factors are considered as a tool for the success and efficiency of this space. Comfort includes the perception of security, cleanliness and availability of places to sit. Maintenance (protection) which is among the most important factors in creating successful public spaces and leads to easy access and increased desirability; in fact, this is one of the issues that is ignored in most processes (Salehi Amiri, Khodaei & Poor Kheiri, 2011). The appropriate combination of existing uses in the public space according to their performance can be effective in

increasing the level of space security for the user. Lack of proper locating of different activities, which are sometimes incompatible with each other can cause confusion and disruption in activities. The type of functions in urban environments and the separation of spaces according to the type of performance and their functional importance has an important role in the level of the security in urban public spaces. The functional importance includes those elements and spaces that have important functions in urban spaces.

#### **C. Environmental-Behavioral (Mental) Indicator:**

Creating the ability to attract people in the public space using effective mental and environmental factors is one of the issues that should be considered by urban planners and designers. "The environment is a complex system of interactions of people, buildings, infrastructures (equipment, roads, railways, airports), hospitals, schools, churches, business centers and government with areas of work, business, family life, opportunities, market activities, which all define urban life" (Bugliarello, 2003). The environment plays an important role in the occurrence of social anomalies in public spaces. One of these environments that needs more attention by urban designers is indefensible urban spaces. Increasing indefensible urban spaces is a factor in the occurrence of crime. The form of space and its physical aspect are some factors enlivening indefensible urban spaces (Salehi Amiri, Khodaei & Poor Kheiri, 2011). Environmental characteristics in an urban space are among the factors that contribute to the increase in social harm. Citizens' dissatisfaction with the environment can lead to various reactions.

### **2.4 Case Study**

The present study was conducted in Janbaz Square in Mashhad. Janbaz Square is located in District 2 of Mashhad. The square became famous for the existence of the Proma shopping center, which is more than a decade old, and since then, the surrounding shopping malls have grown, and it gradually became a large urban space due to the presence of these shopping malls. Also, creating spaces on the four sides of the square caused attendance and improved the design qualities of this space. Also, this square is one of the most crowded squares in the city because it connects to the main thoroughfares and highways. There are also large banks around the square, which attract many people daily.

### **3. Research Method**

The present research method is analytical-interpretive and based on documentary studies and field observation. The theoretical foundations of the research have been obtained through library studies, and the indicators for measuring the subject have been extracted from relevant document, presented in a table. In the next step, the indicators were extracted from the case study, and by using factor analysis method, the importance of the main

factors affecting the security of this space has been determined. In this research, first, a questionnaire was designed according to the extracted indicators, based on a five-point Likert scale. The number of questionnaires in order to be valid for SPSS software analysis is 150. After completing the questionnaires and entering them in SPSS software, the main factors of safety affecting the mental health were extracted using exploratory factor analysis, and analyzed by Friedman, Pearson and t tests. Reliability is assessed using Cronbach's alpha coefficient. In this section, the value of the coefficient obtained for the research variables after validation is presented in the table below. As can be seen in Table 3, the Cronbach's alpha coefficient of the questionnaire is 0.912, which indicates the desired reliability and validity of the questionnaire.

#### 4. Data Analysis

##### 4.1. Description of Variables

###### A. Standard Deviation and Mean

The number, standard deviation and mean of the single variable of mental health are reported in Table 4.

###### B. Testing the Normal Distribution of the Research Variable

To determine the type of measurement statistics, the research hypotheses are determined to be normal or abnormal using the Kolmogorov-Smirnov test. According to the results of the research test, significance level greater than 0.05 indicates the normality of the dependent variable. Therefore, we use Pearson correlation to measure the relationship between variables. The Environmental Security Questionnaire with a significance level higher than 0.05 indicates the normality of data, which should be examined using parametric continuity methods.

###### C. Normality of Data

Because the amount of skewness and kurtosis for the research variables are in the range of +2 and -2, they have a normal distribution. Chart 4 illustrates the normality of the data.

#### 4.2. Inferential Findings

##### 4.2.1. Main Hypothesis: Investigating the Impact of Environmental Security Component on the Mental Health of Citizens in Janbaz Square of Mashhad

To answer this research question, based on the analysis of qualitative data obtained from exploratory analysis and content analysis of the questionnaire, the components were identified which can be classified into 5 main factors, including: 1. Lack of noise pollution and congestion (4 items), 2. The use of favorable green space and nature (4 items), 3. Lack of blind spots (3 items), 4. Amenities and mobility (2 items), 5. Lighting (2 items). KMO Test (Kaiser-Meyer-Olkin Measure of sampling

Adequacy) and Bartlett's Test of sphericity were used to determine whether the number of data in question (size and relationships between variables) were appropriate for the exploratory analysis. KMO Test is an indicator of sampling adequacy that examines whether the slight correlation between variables is small. If the value of the indicator is between 0.50-0.65, factor analysis is medium, between 0.65-0.75 is good, between 0.75-0.85 and above is excellent and factor analysis will be appropriate for the data.

As can be seen in Table 7, the value of KMO test is higher than 0.7 and the sig value is less than 0.05. This result indicates that factor analysis is appropriate for the data. Table 8 shows the results of factor analysis. Table 8 shows the total variance explained, and it is possible to convert the place security dimension to five factors. Table 9 shows the variance rotation of the security dimension.

Chart 5 shows the structural analysis of 5 components. Lack of noise pollution and congestion and lack of blind spots with a negative factor value show the inverse relationship between the two components and mental health. The relationship between the presence of amenities, favorable green space and nature and lighting enhances mental security and health.

##### 4.2.2 Standard Deviation and Mean of the Components

The number, standard deviation and mean of the single variable of place security are shown in Table 16.

1. Lack of noise pollution and congestion (4 items);
2. The use of favorable green space and nature (4 items);
3. Lack of blind spots (3 items); 4. Amenities and mobility (2 items); 5. Lighting (2 items)

##### 4.2.3. Degree of the Effect of Components

Five components were identified and the relationship between each component and the mental health has been shown in Table 11 by Pearson test. Table 12 shows the effect of each component. According to Table 11, the relationship between environmental safety components and mental health is less than 0.05 given the level of significance. Noise pollution and the presence of blind spots are inversely related to the mental health and the other components are directly related.

##### 4.2.4 Ranking of Components

Friedman test can be used for ranking and finding the dimension that has the most damage. According to the value of chi-square (190/762), which is at the significance level of 0.000 (less than 0.05), there is a possibility of ranking. Table 14 shows the ranking. Table 14 shows the priorities based on the Friedman test. The most influential component in mental health is the use of favorable green space, and the lighting has the least impact on mental health.

### 4.2.5 Mental Health Differences between Men and Women

The set of questions gives a number that determines a person's mental health. Is this number different between men and women? The T test in Table 15 shows this

difference. According to Table 15, the value of Fisher (0.089) is in a significance level of higher than  $p < 0.05$ , which shows that there is no difference between the mental health of men and women (Rejection of hypothesis).

Chart 1. Health Dimensions (Hatami, 2010)

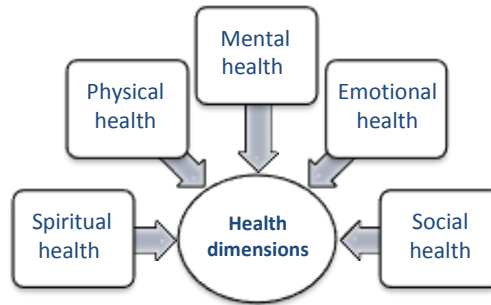


Table 1. Components of Urban Environment Affecting the Level of Mental Health of Citizens (Qaraei & Tabatabaian, 2018)

| Components of urban environment affecting the level of mental health of individuals   | Researchers  |
|---|--|
| Being close to nature and the benefiting from natural elements, including the presence of plants and green space and the use of natural materials | Hansmann et al., 2007; Harting et al., 2003; Mayer, 2009; Matsuoka & Sullivan, 2001                |
| Access to natural light: Enjoy the natural daylight   | Fitzpatrick, 2007; Nayebi et al., 2007; Beauchemin & Hays, 2008; McAndrew, 2008                    |
| Conservation conditions and cleanliness of the environment  | Galea et al., 2005; Evans et al., 2000; Gifford & Lacombe, 2006                                    |
| Access to urban facilities and equipment: responding to the functional needs of space users, access to local services                             | Evans et al., 2003; Schell & Ulijaszek, 1999; Tyson et al., 2002                                   |
| Space safety and security: reducing space capability for the occurrence of crime  | Appleyard & Lintell, 1972; Sotoudeh, 2008; Taylor et al., 1990; Richters & Martinez, 1993          |
| Noise, congestion and crowds: disregarding the spatial territories  | Korte & Grant, 2001; Dursan et al., 2006; Oliver, 2003; Evans et al., 2003, Shakerinia, 2011       |
| Place attachment: the presence of memorable spaces, the role-creating quality of space, the age of the space                                      | Alavi et al., 2008; Bakhtiar Nasrabadi et al., 2011; Dannenberg et al., 2011; Sharifi et al., 2010 |
| Social relations  | Brown et al., 2009; Mehrabi, 2010; Cohen & Wills, 1985; Kweon et al., 1998                         |

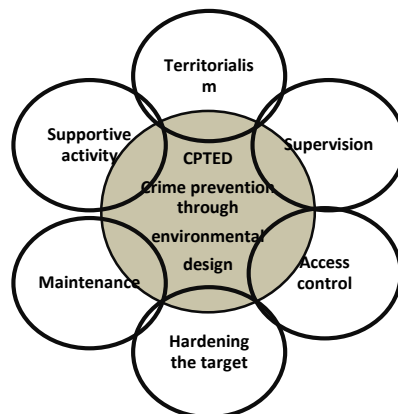


Chart 2. Basic Factors of Crime Prevention through Environmental Design (Cozens et al, 2005, 328)

Table 2. Theories Looking at Safe Urban Environments (Carmona, 2003: 121)

| Year          | Theorists   | Actions  |
|---------------|---|--|
| 1960s         | Jane Jacobs in the book "The Death and Life of Great American Cities"   | <ul style="list-style-type: none"> <li>- The need to have safe streets in the city</li> <li>- Separation of public and private places</li> <li>- Usability diversity and integrating them in the city</li> <li>- Effective and deterrent use of the presence of pedestrians in urban areas to reduce the likelihood of crime occurrence</li> </ul> |
| 1970s         | Ray Jeffrey in the book "Crime Prevention through Environmental Design" and Oscar Newman in the book "Defensible Space" | <ul style="list-style-type: none"> <li>- Reducing the natural potential of criminal hotspots in urban and public areas</li> <li>- Transparency and visibility of public spaces</li> </ul>  |
| 1980s         | George Kelling and Wilson and Paul Brantingham in "Environmental Criminology"   | <ul style="list-style-type: none"> <li>- Presenting "The Broken Windows Theory"</li> <li>- Reducing the potential of criminal hotspots in urban areas</li> <li>- Referring to the disorders in the design of artificial environment</li> </ul>   |
| 1990s - 2000s | Crew Group and in charge of training programs in the book "Crime Prevention through Environmental Design (CPTED)"       | <ul style="list-style-type: none"> <li>- Presenting the strategy and methodology of this approach</li> <li>- Holding a series of international meetings and conferences</li> </ul>   |

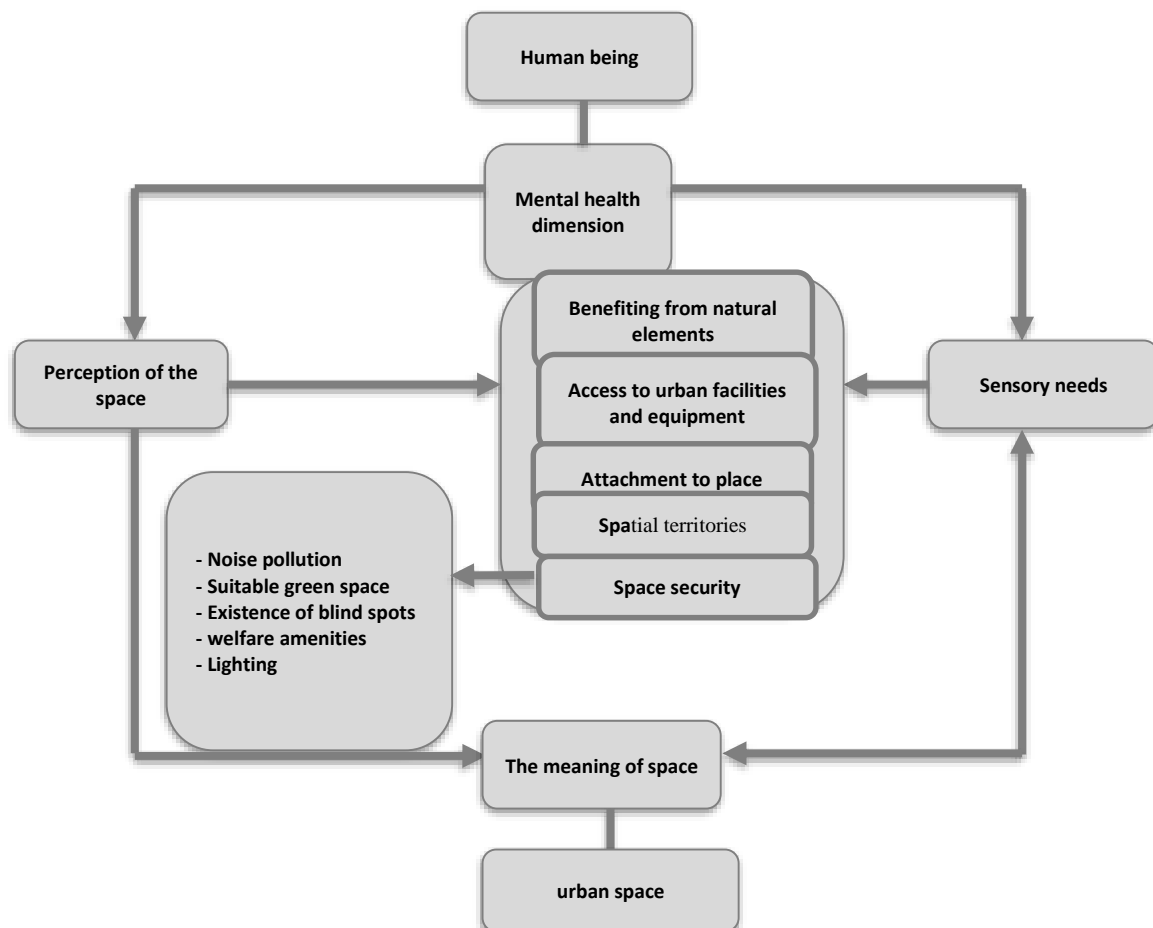


Chart 3. Concept of Security Components Affecting Mental Health in Urban Spaces (Source: Author)



Figure 1. Aerial Photo of Janbaz Square in Mashhad

Table 3. Cronbach's Alpha Coefficient of the Main Research Variables

| Variable            | Cronbach's alpha of Variables |
|---------------------|-------------------------------|
| Mental health       | 0.886                         |
| Security            | 0.773                         |
| Total questionnaire | 0.912                         |

Table 4. Description of the Research Variable

| Components             | Number | Mean  | Standard deviation |
|------------------------|--------|-------|--------------------|
| Environmental security | 150    | 41/47 | 5/48               |

Table 5. Kolmogorov-Smirnov Test

| Components             | Significance level | Statistics of Kolmogorov – Smirnov |
|------------------------|--------------------|------------------------------------|
| Environmental security | 0.078              | 0.100                              |

Table 6. Normality of Data

| Components             | Kurtosis | Skewness |
|------------------------|----------|----------|
| Environmental security | -0.149   | -0.194   |



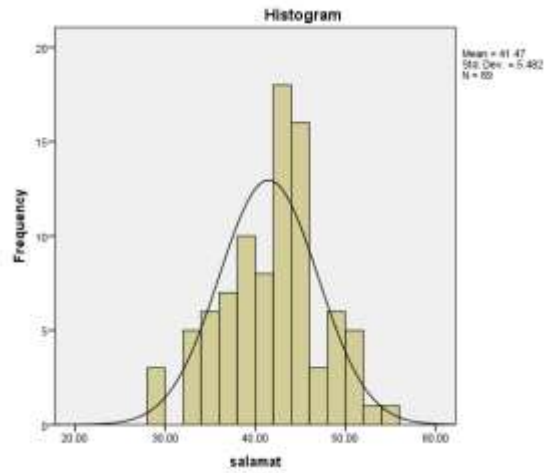


Chart 4. Normality of Environmental Security

Table 7. Exploratory Factor Analysis of Theoretical Foundations

| The main dimension | Value of KMO test and the Bartlett test                   | Number of components | Total variance explained |
|--------------------|---|----------------------|--------------------------|
| Place security     | Kmo=0.717<br>Bartlett test=269/425<br>Df= 105<br>Sig=0.00 | 15                   | 68/482                   |

Table 8. Total Variance Explained

| Question number | Initial eigenvalues |          |                     | Square load extraction sums |          |                     | Square load rotating sums |          |                     |
|-----------------|---------------------|----------|---------------------|-----------------------------|----------|---------------------|---------------------------|----------|---------------------|
|                 | Total               | Variance | Cumulative variance | Total                       | Variance | Cumulative variance | Total                     | Variance | Cumulative variance |
| 1               | 79.3                | 26.25    | 26.25               | 79.3                        | 26.25    | 26.25               | 49.2                      | 62.16    | 62.16               |
| 2               | 55.2                | 52.17    | 32.42               | 55.2                        | 52.17    | 32.42               | 30.2                      | 38.15    | 99.32               |
| 3               | 68.1                | 22.11    | 54.53               | 68.1                        | 22.11    | 54.53               | 27.2                      | 16.15    | 17.47               |
| 4               | 19.1                | 93.7     | 48.61               | 19.1                        | 93.7     | 48.61               | 63.1                      | 92.10    | 1058                |
| 5               | 49.1                | 99.6     | 48.68               | 49.1                        | 99.6     | 48.68               | 55.1                      | 38.10    | 48.68               |
| 6               | 86.0                | 77.5     | 25.74               |                             |          |                     |                           |          |                     |
| 7               | 74.0                | 94.4     | 19.79               |                             |          |                     |                           |          |                     |
| 8               | 58.0                | 93.3     | 13.83               |                             |          |                     |                           |          |                     |
| 9               | 52.0                | 51.3     | 64.86               |                             |          |                     |                           |          |                     |
| 10              | 50.0                | 39.3     | 45.90               |                             |          |                     |                           |          |                     |
| 11              | 38.0                | 58.2     | 63.92               |                             |          |                     |                           |          |                     |
| 12              | 34.0                | 27.2     | 90.94               |                             |          |                     |                           |          |                     |
| 13              | 30.0                | 40.2     | 94.96               |                             |          |                     |                           |          |                     |
| 14              | 25.0                | 72.1     | 67.98               |                             |          |                     |                           |          |                     |
| 15              | 19.0                | 32.1     | 0.100               |                             |          |                     |                           |          |                     |

Table 9. Variance Rotation of the Security Dimension

|     | Component |        |        |       |        |
|-----|-----------|--------|--------|-------|--------|
|     | 1         | 2      | 3      | 4     | 5      |
| 1S  | 0.702     |        |        |       | 0.408  |
| 2S  | 0.672     |        |        |       |        |
| 3S  | 0.836     |        |        |       |        |
| 4S  |           |        |        |       | 0.683  |
| 5S  |           |        |        | 0.882 |        |
| 6S  |           | 0.768  |        |       |        |
| 7S  |           | 0.821  |        |       |        |
| 8S  |           | 0.515  | 0.330  |       |        |
| 9S  |           |        | 0.885  |       |        |
| 10S |           |        |        | 0.728 |        |
| 11S |           |        | -0.343 | 0.309 | 0.700  |
| 12S | 0.552     | -0.364 |        |       |        |
| 13S |           |        | 0.858  |       |        |
| 14S |           | 0.739  |        |       |        |
| 15S | 0.493     |        | 0.507  |       | -0.433 |

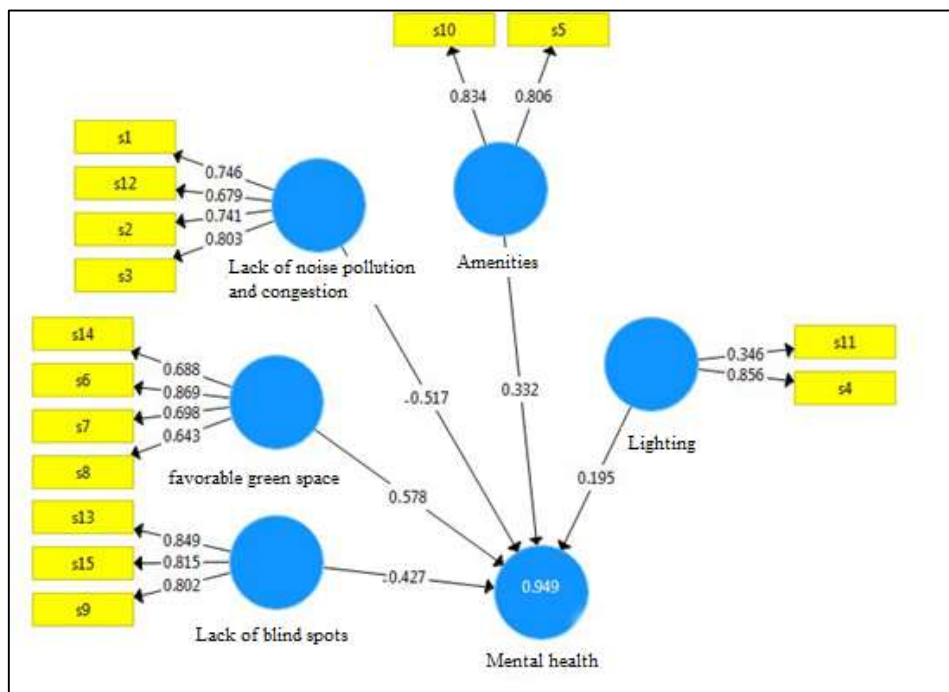


Chart 5. Structural Analysis of Place Security Components

Table 10. Description of the Research Variable

| Components                              | Mean  | Standard deviation |
|---|-------|--------------------|
| Lack of noise pollution and congestion  | 10.7  | 3.34               |
| Use of favorable green space and nature | 12.00 | 3.24               |
| Lack of blind spots                     | 7.51  | 2.86               |
| Amenities and mobility                  | 6.10  | 1.89               |
| Lighting                                | 5.32  | 1.44               |

Table 11. Pearson Test between the Environmental Safety Components and the Mental Health

| Variable      |                    | Lack of noise pollution and congestion | The use of favorable green space and nature | Lack of blind spots | Amenities | Lighting |
|---------------|--------------------|--|---|---------------------|-----------|----------|
| Mental health | Continuity         | -0.409                                 | 0.478                                       | -0.622              | 0.449     | 0.163    |
|               | Significance level | 0.000                                  | 0.000                                       | 0.000               | 0.000     | 0.027    |
|               | Number             | 89                                     | 89  | 89                  | 89        | 89       |

Table 12. Effect of Each Component

| Variable                                    | R      | R <sup>2</sup> | Effect rate |
|---|--------|----------------|-------------|
| Lack of noise pollution and congestion      | -0.409 | 0.167          | 17%         |
| The use of favorable green space and nature | 0.478  | 0.228          | 23%         |
| Lack of blind spots                         | -0.622 | 0.356          | 36%         |
| Amenities                                   | 0.449  | 0.201          | 20%         |
| Lighting                                    | 0.163  | 0.026          | 3%          |

Table 13. Friedman Test for Ranking Possibility

| Variables          |         |
|--------------------|---------|
| Number             | 90      |
| Chi-square         | 190/762 |
| Degrees of Freedom | 4       |
| Significance level | 0.000   |

Table 14. Ranking Based on Friedman Test

| Dimensions     | Components                                  | Value | Rank |
|----------------|---|-------|------|
| Place Security | Lack of noise pollution and congestion      | 3.84  | 2    |
|                | The use of favorable green space and nature | 4.45  | 1    |
|                | Lack of blind spots                         | 2.73  | 3    |
|                | Amenities                                   | 2.17  | 4    |
|                | Lighting                                    | 1.81  | 5    |

Table 15. Independent t-test to Determine the Difference in Mental Health of Men and Women

| Component     | Group  | Number | Minimum | Maximum | Mean  | Standard deviation | Degree of freedom | T      | F     | P     |
|---------------|--------|--------|---------|---------|-------|--------------------|-------------------|--------|-------|-------|
| Mental health | Female | 57     | -3.94   | 0.93    | 40.94 | 5.45               | 86                | -1.226 | 0.089 | 0.766 |
|               | Male   | 31     | -3.97   | 0.96    | 42.45 | 5.57               | 60.605            | -1.219 |       |       |

## 5. Discussion and Conclusion

Mental health is an abstract concept and a relativistic assessment of human relationships with oneself, society, and one's values. Mental health, as a central part of health, means far beyond the absence of mental illness; it means the ability to live, along with happiness and efficiency and without discomfort. Environmental factors are one of the most important factors affecting the mental state of individuals. Everything that happens and is around us forms the environment around us. According to the present study, the environmental security of citizens' place of travel can affect their level of mental health. According to the findings of the present study, the main hypothesis of the research was confirmed; the level of citizens' mental health in being affected by urban environmental factors is significantly affected by environmental security. The built environment can directly and indirectly affect our mental health. Existence of parks, green and natural spaces in urban spaces which have a positive effect on urban visual aspects, can be effective in promoting the level of mental health of citizens. Another factor that can affect people's mood and affect their psychological evaluation of spaces is the amount of natural light and lighting received. Of course, it should be borne in mind that exposure to intense natural light on the other side can also reduce the amount of environmental comfort and create psychological distress in the person. The environmental characteristics of the urban space, which provide opportunities for sincere interactions of citizens, increase social solidarity and are also effective in improving the mental and psychological state. Indeed, the need for privacy must be met, as much as the possibility of social interaction with others, so that there

is no feeling of lack of control over the environment. Congestion and crowdedness of urban space causes a person to inevitably engage in unwanted social interactions with others and experience a sense of lack of control over environmental conditions that in turn can cause psychological stress for the person and reduce his mental health. It can be said that people who have emotional place attachment or a feeling of belonging to the place, have more commitment to the community in the urban space, are less motivated to leave the place, show less negative behavior and experience a higher level of mental health. The quality of cleanliness and maintenance conditions of urban space is also one of the factors that affects the citizens' satisfaction with Janbaz Square as an urban space, shapes their mental interpretation of the situation on the field and affects their level of mental health. Noise pollution in the form of unfavorable, unpleasant or unwanted sounds can cause psychological distress, aggravation of stress and mental fatigue. Creating calm spaces can be effective in improving the mental state of people. Fear of crime occurrence brings mental and psychological problems such as stress and anxiety. Achieving security in this space is very important in terms of mental health. Presence in environments with low physical safety causes people to stay away from the environment, a weak social feeling prevails in the environment, people experience a kind of constant fear and anxiety, and finally it can be a factor in reducing the level of mental health of people. Based on this research and in to find how environmental security in Janbaz Square is related to the level of mental health of citizens and explain the dimensions of environmental security affecting the level of mental health of citizens, the five main factors,

including lack of blind spots, favorable green space, lack of congestion and noise pollution, lighting and amenities were respectively identified as determinants of environmental security affecting the mental health of citizens. Planning to improve the environmental security of Janbaz Square, which can provide conditions for improving the mental health of citizens, should be done in several areas, including: 1) reducing noise pollution, congestion and crowdedness in Janbaz Square by optimal spatial and user planning 2) favorable distribution and locating of 24-hour spaces to increase night security 3) increasing the safety and security of the square by relieving traffic and providing design solutions to reduce space insecurity conditions 4) improving the cleanliness and maintenance of the neighborhood 5) designing the square in a way that increases benefiting from natural light and the use of green and natural elements and 6) eliminating spaces with blind spots in the square.

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