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Evaluating the Effect of Physical Components on the Promotion of the Sense of Security in Educational Spaces from the Perspective of Students; Case Study: High Schools of Bojnourd

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ABSTRACT

The physical safety of educational spaces is one of the most important measures in planning and design of such spaces. The present study aims to investigate the importance of physical security and identify environmental variables creating security in educational spaces and physical factors affecting students' sense of security in educational spaces located in Bojnourd. This study is survey and correlational research. The present study seeks to answer the following questions: What factors affect security? What are the most important physical factors influencing a safe school? What are the most important socio-interpersonal factors influencing a safe school? According to the research questions, the following hypothesis is explained for the research: "The environment affects the promotion and improvement of security. Therefore, Friedman's statistical test and Pearson's correlation are used to determine the relationship between independent and dependent variables and its intensity. Accordingly, six components are assessed. In summary, the results of this study indicate a significant relationship between the indicators from the students' point of view and the sense of security. According to the correlation coefficients, the indicators can be prioritized as follows: territoriality, supervision, space quality, activity, access control, and management and maintenance. The results indicate that about all six indicators, the mean of optimal status obtained from the students' perspective is significantly different from that obtained from the teachers' perspective. The highest difference is associated to the access control indicator and the least one is associated to the indicators of management and maintenance and space quality. It can be concluded that the respondents do not give the same rank to the sub-indicators. For students, access control and supervision sub-indicators are at the forefront of the current state.

Keywords: Closed Educational Space, Security, Pearson's Correlation Coefficient, Friedman's Analysis.

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1. INTRODUCTION

Many expenses are spent annually to ensure security in schools. If the conditions of environmental comfort are provided in them, schools can play a significant role in meeting the various social, cultural, and psychological needs of students, as one of the most important areas and public spaces. However, if various measures are not taken, such spaces are highly prone to abusive and criminal behavior. A child's world comprises a home, a school, and the community around them, whose security must be ensured. Students are more likely to have accidents, injuries, and deaths if schools do not have an acceptable level of safety principles. Security has occupied an important place in public life, to the extent that some social thinkers have defined "security" as synonymous with "health" and believe that security can ensure the survival and stability of a healthy society (Azemati, Norouzian Maleki, & Khan Vali, 2016, p. 5). In the United States, the Safe Communities and Schools Program was held in the state of Colorado. According to the policies of this research program, school security is achieved through the connection between the school environment and the larger community. Schools worldwide use a variety of criteria to improve their physical safety, including asking police officers for help, supervision cameras, restricting access to school buildings, increasing lighting, and so on (Trump, 1998, p. 17). Security is considered as one of the basic psychological needs, which facilitates human development and has a significant impact on intelligence, psychological competition, learning performance, and student motivation. Research shows that mental and physical security enhances students' academic performance in both objective and subjective ways (Anderson, 1982). Evidence suggests that more than 6.6 percent of students across the United States refuse to attend school for at least one day a month because of feelings of insecurity and fear of school (Dinkes, Kemp, & Baum, 2009, p. 23). In their study, Le Boeuf and Ingersoll (1997) showed that school crime causes students to perceive the school environment as an unsafe one and to try to gradually withdraw from it to ensure their safety. They also found it interesting that students are afraid of some special places in the school, sometimes even because of violence and crime in such places. For example, it was found that some students were mostly afraid of corridors and the school store because of the possibility of stealing and entering steep stairs. They considered this property as one of the determining criteria of unsafe schools. According to Gottfredson, 55% of American schools implement a series of supervision programs. For example, physical supervision at school entrances has been one of the most effective programs for providing physical security in schools. Nevertheless, Gottfredson's findings are consistent with those of the National Center for Educational Statistics. According to research conducted by the center in the period of 1996-1997 on several American schools under the name of "school violence," the closure of the school grounds at lunch and the control of entrances account for 80 and 54% of the dimensions affecting security, to Sequence (Gottfredson, 2000, p. 82). In line with the National Vision Document, safe passages in the 21-year national vision horizon should have the following characteristics, taking into account passive defense considerations:

- Settling in a suitable position as one of the centers of gravity of the neighborhood
- Having multi-purpose shelters with the ability to provide services to the neighborhood
- Having a relatively strong and durable building
- Having the ability to continue educational activities and resettle the population under critical conditions

Have students, teachers, and staff ready for critical situations

- To have the knowledge and insight of schoolchildren from the threats of the enemy and the general areas of passive defense
- Having the services needed and prepared for the covered population under critical conditions

By considering the interrelationship between the environment and human behavior, new approaches to environmental design have come to believe that the socio-physical structure of the environment and the formulation and application of specific criteria in the environment can significantly prevent the commission of crimes. The term "Crime Prevention through Environmental Design (CPTED)" was first coined by Ray Jeffrey, a criminologist. Simultaneously, the term "defensible space" was coined by Oscar Newman, an architect. Newman's CPTED model was later developed by Timothy D. Crowe. This approach has been accepted since 2004, with reference to the Newman-Crowe model, along with Jeffrey's behavioral model as an interdisciplinary strategy (KyungKim, 2006). According to the researchers, the CPTED approach can be classified into four factors: supervision, access control, territoriality, and maintenance (a.k.a. natural supervision, natural access control, territorial reinforcement, and maintenance). Theorists such as Oscar Newman, Taylor, Crowe, and Perkins support the territoriality principle. The natural supervision principle has also been considered by Jane Jacobs, Newman, and Perkins. Brantingham and Brantingham, Cozens, and Crowe highlighted access control in their studies. Wilson and Kelling, with broken windows theory and Newman in defensible space, have supported the issue of maintenance and image (Abdulla & Salleh, 2012). There are seven theories that state the relationship between a sense of security and spatial variables: 1) Jane Jacobs's theory, 2) Oscar Newman's theory, 3) CPTED institute, 4) Hiller theory, 5) Weckler and Whitzman, 6) Carr and 7) Tibbalds.

Like any other crime, the importance of security requires the satisfaction of spatial conditions and the need to meet different conditions. Some places, especially schools, have features that meet the

conditions required for a crime to occur. Therefore, the provision of facilities and equipment in the school environment will not lead to their satisfaction, even if they are based on the most basic scientific rules, if they are not based on its perception of the environment. Therefore, this issue should be given much attention. In this case, it should be reviewed in the physical design of educational spaces according to the specific age-sex characteristics of students to provide a safe environment for the formation of their social, physical, and psychological needs.

In this regard, the present study was conducted to identify the physical factors affecting students' sense of security and, consequently, increase the presence of this group in high schools in Bojnourd. The research questions are as follows: "What factors affect security?" "What are the most important physical factors influencing a safe school?" What are the most important socio-interpersonal factors influencing a safe school? According to the research questions, the opposite hypothesis was explained for this research: "The environment affects the promotion and improvement of security.

2. RESEARCH BACKGROUND

The Dehkhoda Dictionary defines the word "security" as a lack of fear and a sense of security, safety, and security (Dehkhoda, 1993, p. 2894). Buzan has literally defined security as "protection against danger or safety," "sense of security," and "freedom from doubt." He has also categorized threats to society into three types: physical threats, economic threats, rights threats, and position threats. Security is one of the innate needs of human beings, manifested in various civilizations, cultures, and environments, including the construction of shelters or the confinement of possessions. Petrella presents a classification of the three main pillars of crime prevention and environmental security, shown in the figure below:

Fig. 1. The Three Main Pillars of Crime Prevention
(Petrella, 2004, p. 112)

By studying the definitions of "security" in different sources, three different categories of security concepts can be articulated. The first category includes definitions that emphasize the collective identity threat. Accordingly, security refers to maintaining a set of characteristics by which individuals consider themselves members of a particular group. The second category sees security as the absence of fear of destruction and threat to the values of society. Finally, the third category emphasizes the collective liberation from the threat posed by an illegal act committed by a government, agency, individual, or group, in all or part of society. Like many other concepts, two distinct dimensions must be considered to explain the concept of security, one objective dimension (i.e., objective environmental-behavioral parameters) and the other mental dimension, perceived based on a sense of collective security. Certainly, both dimensions can have a positive or negative effect on each other, indicating the need to pay attention to both in establishing both public security. The sense of security in a society depends on the psychological feeling of users about the existence or absence of crime and the circumstances of the crime in that society. The higher the frequency of crime and the more favorable the conditions for crime to occur, the lower the sense of security of users. Indeed, a sense of security can be seen as a state where an individual's individual and social needs and desires

are satisfied, and a person feels valued and trusted.

According to Hopper and Droge, a suggested version and template should not be considered for all locations to establish space security. They believe that the various threats that lead to the consideration of "space security" enable the designer and planner to achieve a suitable design pattern. They categorize these threats as a health threat, welfare and safety, unsafe working conditions, poor space maintenance, non-violent crime, theft, domestic violence/ workplace violence, and terrorist attacks. Given the different levels of threat, these studies offer several criteria for providing space security: 1) informing personnel, environmental monitoring, and controlling access points: overcoming the feeling of isolation of spaces, 2) using appropriate technologies, 3) physical improvement Environment, and access control points (ACPs): space retreat, physical barriers and edges, video supervision, access control, layered environment, and spatial hierarchy (Hooper & Droge, 2005, p. 28).

Safe schools have a supportive, emotional, physical, and mental health environment for students. In such schools, students are not exposed to physical or emotional harm. Also, educational space should be physically desirable. Rooms with the desired physical quality refer to spaces that have been designed according to the standard of indicators such as healthy air, appropriate temperature, sufficient humidity, light, sound, proper view/vision, access, and communications. Such spaces provide the necessary security for users. A study has been conducted in this field in Iran entitled "Designing girls' high school spaces with an emphasis on intimacy and comfort. Among the most important criteria for security are the restriction of vision by windows, attention to the materials, shape, and physical quality of the walls, the scale of space, in the design of entrances, car entrances, and student entrances are designed separately for different points. Open up and then look inside the school. (Various methods can be used to control the view of passers-by through the entrance to the schoolyard, including the use of trees and shrubs, creating the failure of vision by changing the angle when entering the school, and using lightweight retaining walls and additions), Rastegar, 2008, p. 187). In his doctoral dissertation on safe schools, Gastic examines the history of this issue in schools. He believes the problem has its roots in violent behavior in American schools. According to him, these factors reduce the collective sense between students in the environment, and there is a significant correlation between security and collective sense in space. This study used a questionnaire tool to collect data. These questionnaires include six questions that assess the extent to which student's exhibit violent behaviors in the environment. Socio-emotional connections between users of space cause them to feel safe in the environment, due to interdependence and mutual knowledge in the environment. Due to the diversity of schools in this dissertation in case studies, studies indicate greater security in small religious and private schools and more religious environments than other environments, leading to an increased interpersonal, collective sense. This dissertation considers the criteria of supervision and controllability of space, personal experience, and individual perceptions of space security as components affecting security. Environmental components and the sense of security are interdependent. The results show that students' views on security depend on socio-individual and environmental components (i.e., size and physical quality). Different components have different effects at different demographic levels. Herein, the required information was generally collected through three questionnaires (i.e., parents, administrators, and students) in two parts: personality information and information about school evaluation (school size and location). The control variables were gender, ethnicity, income, size, position, and school pattern. In their dissertations, Siburk et al. (X) have done various researches. Their results show that the sense of educational space security depends on components such as equipment and facilities in the environment, educational program, and so on. These environments provide the necessary capabilities for communication between students in the environment (Gastic, 2005, p. 123).

Very few studies have been done in this regard in Iran. For example, the results of studies conducted by Afhami and Ghaffari show that security is one of the factors affecting the design of desirable educational spaces. Low security in educational spaces will cause several restrictions to be imposed on the space, and students will not have the necessary focus when working and learning. In his doctoral dissertation on the desirable physical properties of an educational environment, Joseph Glenn refers to criteria such as safety. He believes that the physical and mental comfort of users in educational spaces is one of the most important security measures, which improves students' learning and education. In this context, he suggests that school classrooms should be kept as far away as possible from noisy centers inside and outside the school. Thermal, ventilation, and acoustic conditions and indoor lighting should also be controlled as much as possible. In addition, rest areas should be placed as close as possible to the physical space of the classroom (Joseph Glenn, 1991). According to Lynch, urban landscape experts consider signs and symbols (or signs) to be among the most important factors in identifying different parts of the city. In this way, people, especially strangers and new-comers, feel safe by communicating with them and finding their way. If places are identified with the same quality as they are organized in mental structures, not only can individuals function more effectively in the environment, but it also leads to emotional, emotional, and enjoyment of the environment (Salehi, 2008).

In rural areas, with collective knowledge, collective

supervision prevents crime. In cities, most people do not know each other, which means that crimes are kept secret, while in rural areas, no one is a stranger and everyone knows each other completely and deeply. In one study, Albanesi et al. addressed the link between insecurity and collective sense in urban settings. They believe that collective sense has a significant impact on security in different environments. In this study, a case study of 823 Italian teenagers aged 14-19 years showed that 64% of whom lived in small towns and 35% in large cities. The results indicate the cognitive, emotional, and social dimensions of security. In this study, adolescents believe that they will exhibit more violent behaviors in the environment if they encounter more social problems in that environment. The results indicate greater interpersonal cohesion in smaller settings, increased socio-personal exchanges, and greater fear of crime. There will be a higher sense of security and security in the environment, and men feel more secure than women, which can be attributed to their greater collective sense. In addition to the physical dimensions of the environment, the emotional dimensions are related to feeling insecure in a particular situation, including imagining and predicting future events in that environment. Factors such as social support depend on people's expectations of each other: Social bonds in social support will help people protect themselves from each other. "Supporting friends and family" and "being aware of the presence of people and friends in the environment" are important as components for protecting individuals in potentially dangerous future situations. Also, "negative experiences of living in the environment" will affect security in the environment (Albanesi, Cicognani, & Zani, 2001).

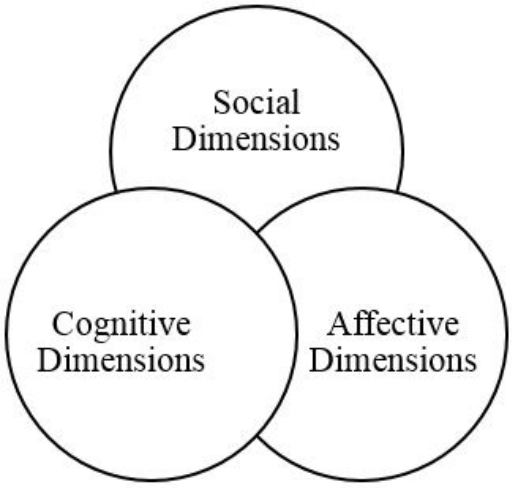

Fig. 2. Dimensions of the Sense of Security
(Albanesi, Cicognani, & Zani, 2001)

In Defensible Space, Oscar Newman argues that every space should have an administrator (custodian) to increase security or create defensible space, and empty spaces without an administrator provide grounds for crime and insecurity. A series of hierarchies should be defined for spaces to encourage citizens to be present in public spaces and to maintain the freedom of commuting to public places and to preserve personal property. Important factors that deter criminals from committing a crime include the ability of physical design to inform the separation of public and private spaces and the specificity of the space when it is performed on a human scale, and cognition. In research on space security, Taylor, Hall, and colleagues firmly believe that in addition to the criteria mentioned, the presence of citizens in space (there must be ground in space to reduce the vulnerability of the environment. Increased space-specific features increase public attendance and, consequently, security (Heshmati, 2003). CPTED theory can be said to have a long history, a product of the 1960s in the United States. After the 1960s, this theory and the environment-crime relationship became more and more apparent as a result of the work of people like Jacobs in Death and Life of Great American Cities (1961), Angel in Crime Prevention Through Urban Design (1968), Wood with Social Aspects of Housing and Urban Development (1976), Newman with defensible space (1972), and Jeffrey with Crime Prevention Through Environmental Design (1971).

In this decade, most activities have been based on emphasizing and proving the relationship between the physical environment and crime. Since the mid-1980s, CPTED has gained strength by forming environmental criminology theory and other theories such as broken windows theory and the strengthening of theoretical principles and foundations. However, the roots of environmental criminology and the study of hot spots go back to the mid-19th century. CPTED theory was first developed and formulated by Jeffrey. Jeffrey's model was more comprehensive than Newman's model. Defensible space theory expresses a space that allows residents and encourages them to be seen, in the first place, and to supervise others, in the second place. Indeed, defensible space reinforces two types of social behavior: territoriality and natural supervision.

The increased sense of security of residents in the neighborhood increases people-environment interaction, allowing people to intervene when a crime is committed or report it to the police. These cases have also been considered key elements in CPTED theory until recent years (Pudranchi, 1996). Newman sought to reduce crime by reducing the opportunity to commit the crime and fostering positive social interaction between residents. In smaller areas, defensible space increased the effectiveness of informal control and, consequently, reduced the likelihood of crime (Murry, 1994). Defensible space theory had a different impact in the early 1980s. In the 1980s, a series of efforts and activities were made that led to the development and growth of this theory. The first was the broken windows theory, proposed by Wilson and Kelling (1982). The theory concluded that neighborhood decline and lack of maintenance could affect individuals' behavior (maintenance and retention of assets, such as supervision, entry control, and territoriality) were added to the theory strategies. In the third case, Clark extended his views on environmental criminology. Finally, Crowe's efforts were very effective in advancing the theory's plans and strategies. They also consider the physical environment and the social aspects of the environment.

Given the six elements that can be enumerated for it, this theory seeks to reduce criminal opportunities, opportunities that are considered as the main cause of crime in the mechanical approach to crime prevention. This is done by enhancing the sense of place, distinguishing between public and private spaces, increasing visibility and supervision, crime target-hardening, and restricting access. The main purpose of such theories is to reduce the fear of crime by increasing the sense of security, increasing the quality of the beauty of the environment, and in particular, reducing the desire of the environment to support criminal acts. This theory was developed in the early 1960s and 1970s in the United States. The effect of design on behavior and crime can be seen in the works of people such as Wood, Jacobs, Angel, Newman, and Ray Jeffery. This theory includes three main strategies: 1) natural access control, 2) natural supervision, and 3) territorial reinforcement (Atlas, 1999). This theory also includes six principles, as shown below.

Fig. 3. Crime Prevention Theory
(Salehi, 2008)

Therefore, it is important to achieve the indicators needed to measure students' sense of security in using high school spaces related to their level of mental satisfaction and sense of comfort. Security and order cannot be provided in educational spaces without identifying the indicators and factors that affect and are related to students' sense of security. Therefore, such identification is considered as one of the basic preconditions in planning to improve the level of security. In this regard, after a survey of experts, the following criteria were selected to measure the sense of security: territoriality, video supervision, access control, management and maintenance, a suitable place for activity and presence of people, and the quality of the physical environment.

Table 1. Criteria for Assessing the Sense of Security

Theorist	Theory
Jacobs	Separation of public and private areas, natural supervision of space and active sidewalks
Newman	Presence in public space, the specificity of space, familiarity, the existence of natural supervision: each space should have an administrator.
Jeffery, Angel, Jacobs,Wood	Natural territories, access control, natural supervision, support for social activities, maintenance, environmental quality, and target hardening
Hilier	The natural movement of people, the presence of people

Theorist	Theory
Weckler and Whitzman	Awareness of the environment, observability by others, facilitated access if needed
Carr	Comfort and convenience, active presence in space, inactive presence in space, discovery
Petrella	Targeting police patrols, improving communication and access, completing neighborhood supervision, targeting vulnerable groups, improving street lighting: revitalizing public space
Lynch	Signs and symbols, signs and identification of the environment
Hopper and Droge	environmental monitoring, access point control, use of appropriate technology, physical improvement of the environment, layered and hierarchical environment, space retreat, physical barriers, and edges

3. SAFE SCHOOL

To educate citizen students, schools must educate students in socio-individual dimensions. To this end, the school must protect students from danger. Safe school research has its roots in discussions of school violence. Since 1989, several studies have been conducted on the achievement of practical and theoretical models of safe schools (Morrison, Furlong, & Morrison, 1994). Recent approaches to safe schools are more of an educational concern than a concern of criminology. There is a strong correlation between safe schools and effective schools in the literature (Miller, 1994). Early efforts to investigate youth violence in the United States Senate Committee on the Judiciary (Bayh, 1975) date back to the findings of safe school studies on violence and victimization in national schools in the national institute of educators (1978). These findings do not have sufficient scientific accuracy due to inaccurate or incomplete information. Researchers in this field have selected risk indicators, success indicators, environmental indicators, and student behavioral changes as tools to examine school violence. Very little research has been done in this regard in Iran. For example, only studies conducted by Afhami and Ghaffari show that security is one of the factors affecting the design of desirable educational spaces? Low security in educational spaces will lead to the imposition of several restrictions on the space and the lack of focus of students during activities and learning. In its report, the National Research Center (1993) lists four key characteristics for increasing violence and decreasing school security: 1) the large number of students occupying a limited space; 2) the capacity of the school to prevent students from confronting each other; 3) low-quality school building space; and 4) imposing behavioral patterns that promote anger and violence. Another study also listed some school characteristics that endanger school safety. These are 1) lack of belonging and dependence on the school environment, 2) collective apathy and lack of participation in school affairs, maintenance, and management, 3) teacher negligence, and 4) lack of organization in school (Cernkovich & Giordano, 1992; Zwier & Vaughan, 1984). According to Morrison, a safe school meets all physical, mental, and emotional needs. To ensure the sustainability of such an environment, students should strive for scientific achievement. A safe school promotes creativity, participatory learning, social behavior, and risk acceptance. This school should be planned in the direction of an effective school (Morrison, Furlong, & Morrison, 1994). According to Morrison and Furlong studies, most safe school models address adolescent violence or the individual and personal components of the "safe school" theme. Accordingly, there is still no complete model of this school to improve growth skills and explain a positive and complete environment. There are a few of these models. Most research in this area has been done since 1988. "Safe school" does not mean freedom from violence, but a safe place and peace. A school must protect students from physical, mental, and developmental hazards (Ibid, p. 74). One of the researches in this regard is the Morrison safe school model, a combination of the features of a safe school and an effective educational school. It has five dimensions: the physical component, the social component, the cultural component, the hazards of space, and the individual components. These components include two general dimensions, the mental dimension and the objective dimension, which refers to the perceptions of individuals in the environment. In his view, a school is safe not only because of the lack of certain objects but also because of the existence of certain objects (Ibid, p. 101). Major anti-violence programs in American schools have considered several strategies to eliminate violence through school programs. Behavioral components in American schools affect perceptions of security. Much research on safe schools refers to positive social activities so that students and staff feel satisfied with the environment (Furlong et al., 1991; Morrison, Furlong, & Morrison, 1994; Rosen, 1994). In the Safe Schools Report, a 1989 Safe Schools Planning Action Plan in the California Department of Education examined the characteristics of a school. In line with these studies, studies have been conducted with educators from across California to develop a common model for a safe school (California Department of Education, 1989). Then, the report concluded that four general characteristics should be considered to develop safe schools: 1) characteristics of staff and students such as cultural diversity, life experience, staff specialization, and physical characteristics; 2) physical environments such as school location, school land, Buildings and classrooms, school neighborhoods, and internal school

security; 3) social environment such as interpersonal and organizational processes, events within and around the school, management, organizational structure, curriculum, class structure, and how to participate in school; and 4) environment A culture that addresses the general characteristics and spirit of the school, such as behavioral and scientific expectations (A Planning Guide for Action, 1989). Morrison describes the relationship between risk levels, security levels, and patterns of behavior as follows (Table 2).

Table 2. Levels of Risk from Morrison's Perspective

Security Level	Behavioral Samples	Risk Level
Physical	Guns and weapons at school, serious destruction of school buildings, lack of immediate response, suicide, lack of neighborhood maintenance, and littering	Risks Associated with Life Injuries
Physical and Mental	Lack of order and security in general, constant and serious fights and conflicts, self-alienation between student groups, dangerous land and facilities without management, observation of delinquent activities, risk of physical attack on the school route	Risks Associated with Physical Injury
Physical, Mental, and Developmental	Psychological harassment, intimidating effects of hoodlums (mobs) in school, average crime rate, littering on school grounds, lack of clarity of school rules and their enforceability	Dangers Associated with Intimidation and Individual-social Threats
Developmental	Ineffective responses to school collective diversity, rejection of demographic diversity, concern about school hazards, lack of participation and cooperation	Risks Associated with Personal Separation
Developmental	Lack of favorable conditions for learning, lack of conditions for problem solving, support services such as student supervision, unskilled teaching staff, limited cooperation of collective resources	Risks Associated with Opportunity and Support
Developmental	Outdated educational approaches, scientific focus, non-shared learning expectations, lack of clarity and agreement about school missions, inappropriate school transfer schedule	Risks Associated with School Success
Developmental	Lack of counselors, lack of cooperation and participation of students in problem solving, unsupported teacher-student relationships, inappropriate interference of the educational program	Risks Associated with Individual and Social Decisions

In line with the above-mentioned researches using quantitative and qualitative methods, this study adopted a different approach to investigate the quality of the security component in Bojnourd high schools and to assess the gap between the perceptions of the security component in boys' high schools. This quality is obtained simultaneously from the degree of gap and differences between the perceptions of people who use the high school space. Perceptions target the quality of the current state.

4. METHODOLOGY

This is an applied study in terms of purpose, which uses a descriptive-survey research method. According to the results of the literature review, the necessity of "safety in schools" and "level of security" in the studied schools was extracted, and research hypotheses were formed. Then, users' perceptions of the security component are measured using a researcher-made questionnaire based on a 5-point Likert scale. Data analysis is done in several steps. First, to measure the environmental security component, the data of the perception questionnaires are examined to identify the gap between them in the indicators. In the next step, the questionnaire data are evaluated, and each of the six indicators is prioritized based on the findings of the hierarchical analysis process. In this way, it becomes clear that users prioritize or attach importance to which of their indicators and factors to improve the current situation and present future plans. The overall reliability of the User Perception Questionnaire is assessed and verified using Cronbach's alpha, indicating the appropriate reliability of the items. The validity of the questionnaires is also assessed using formal narrative analysis using the views of professors and experts in the field of architecture. Then, the questionnaires are distributed, and the data is collected and analyzed, and the quality of the security component is measured by measuring the gap between users' preferences. Afterward, the questionnaires were distributed among 200 users as a randomly selected sample, taking into account a 95% accuracy and an error level of 0.05. Finally, the obtained data were analyzed using SPSS software. Finally, the sub-indicators were prioritized using Friedman's test. Also, each of the security indicators was introduced in terms of importance, as described below. Pearson's correlation coefficient was used to evaluate the correlation between security sense metrics and components of supervision, territoriality, activity, and so on.

5. FINDINGS

H1: There is a significant relationship between indicators from students' point of view and sense of security.

To test this hypothesis, the correlation coefficient

test was used. The results of this test are presented in the table below. This table shows the coefficient of correlation between the six indicators and the sense of security among students. According to this table, the significance level of the coefficient of correlation test between the sense of security and the indicators of supervision, access control, territoriality, activity, and space quality is less than 0.05. Therefore, it can be concluded that there is a significant direct relationship between the sense of security and the above-mentioned indicators with a 95% confidence level.

On the other hand, the significance level of the coefficient of correlation test between the sense of security and management and maintenance is more than 0.05, indicating the lack of a significant relationship between the sense of security and management and maintenance with a 95% confidence level. According to correlation coefficients, indicators can be prioritized as territoriality, supervision, space quality, activity, and access control. The results indicate a high correlation of territoriality and moderate and weak correlation of other components.

Table 3. Correlation between the Six Indicators of Sense of Security and the Sense of Security Component from Students' Perspective

	Sense of Security	Supervision	Access Control	Territoriality	Activity	Space Quality	Management and Maintenance
Sense of Security	1	0.3	0.222	0.48	0.23	0.245	0.159
Significance Level	.	0.002	0.021	0.00	0.017	0.011	0.101
Supervision	0.3	1	0.253	0.484	0.358	0.362	0.276
Significance Level	0.002	.	0.008	0	0	0	0.004
Access Control	0.222	0.253	1	0.395	0.284	0.389	0.1
Significance Level	0.021	0.008	.	0	0.003	0	0.303
Territoriality	0.48	0.484	0.395	1	0.455	0.535	0.499
Significance Level	0.00	0	0	.	0	0	0
Activity	0.23	0.358	0.284	0.455	1	0.232	0.239
Significance Level	0.017	0	0.002	0	.	0.016	0.013
Space Quality	0.245	0.362	0.389	0.535	0.232	1	0.281
Significance Level	0.011	0	0	0	0.016	.	0.003
Management and Maintenance	0.159	0.276	0.1	0.499	0.239	0.281	1
Significance Level	0.101	0.004	0.303	0	0.013	0.003	.

H2: There is a significant relationship between indicators from teachers' point of view and sense of security.

To test this hypothesis, the correlation coefficient test was used. The results of this test are presented in the table below. This table shows the coefficient of correlation between the six indicators and the sense of security among teachers.

Table 4. Correlation between the Six Indicators of Sense of Security and the Sense of Security Component from Teachers' Perspective

	Sense of Security	Supervision	Access Control	Territoriality	Activity	Space Quality	Management and Maintenance
Sense of Security	1	0.691	0.795	0.617	0.292	0.565	0.592
Significance Level	.	0.019	0.003	0.043	0.384	0.07	0.055
Supervision	0.691	1	0.816	0.858	0.618	0.739	0.729
Significance Level	0.019	.	0.002	0.001	0.043	0.009	0.011
Access Control	0.795	0.816	1	0.879	0.12	0.609	0.642
Significance Level	0.003	0.002	.	0	0.726	0.047	0.033

	Sense of Security	Supervision	Access Control	Territoriality	Activity	Space Quality	Management and Maintenance
Territoriality	0.617	0.858	0.879	1	0.371	0.758	0.642
Significance Level	0.043	0.001	0	.	0.262	0.007	0.04
Activity	0.292	0.618	0.12	0.371	1	0.59	0.447
Significance Level	0.384	0.043	0.726	0.262	.	0.056	0.169
Space Quality	0.565	0.739	0.609	0.758	0.59	1	0.777
Significance Level	0.07	0.009	0.047	0.007	0.056	.	0.005
Management and Maintenance	0.592	0.729	0.642	0.624	0.447	0.777	1
Significance Level	0.055	0.011	0.033	0.04	0.169	0.005	.

According to this table, the significance level of the coefficient of correlation test between the sense of security and the indicators of supervision, access control, territoriality, and space quality is less than 0.05. Therefore, it can be concluded that there is a significant direct relationship between the sense of security and the above-mentioned indicators with a 95% confidence level. On the other hand, the significance level of the coefficient of correlation test between a sense of security and activity, management, and maintenance is more than 0.05, indicating the lack of a significant relationship between sense of security and activity, management, and maintenance with a 95% confidence level. According to correlation coefficients, indicators can be prioritized as access control, supervision, territoriality, space quality, and activity. The results indicate a high correlation between access control, supervision, territoriality, space quality, and weak correlation of activity variables. The average table of sub-indicator rankings for students is as follows.

Table 5. Average Ranking of the Sense of Security Sub-Indicators from Students' Perspective and the Gap Difference between Them from Those from Teachers' Perspective

Item	Sub-indicator	Overall Rank	Average Rank	Gap
1	I know the people in this school.	18	11.79	0.29
2	Sharp corners and out-of-sight corners	25	8.71	3.3
3	Possibility of supervision of the teaching staff	2	16.5	2.14
4	Ability to see different corners of the closed space	11	13.25	0.02
6	Possibility of natural supervision of people on space	8	14.5	0.05
7	Lighting and illumination of spaces such as classroom, corridor, side hall	6	15.57	-0.02
8	School entrances are defined.	4	15.73	-1.27
9	The school has a guard.	1	17.31	-2.01
10	Predictable movement paths	3	16.03	0.03
11	I feel intimate in this space.	15	12.17	-3.74
12	The scope of collective and common spaces such as meeting hall, celebration hall, classroom, etc. is defined.	7	14.91	-0.41
13	The boundaries of the entrance hall spaces are clear.	5	15.76	-0.65
14	The range of access paths inside and the hall spaces can be detected.	12	13.23	-4.18
15	Signs and markings	19	11.78	0.28
16	Proper landscaping	13	12.62	-2.56
17	The presence of people is observed at different hours.	14	12.61	2.79
18	Attractive applications of people in school	22	10.81	0.08
19	Beyond neighborhood	24	9.27	1.04
20	Boarding school applications	23	9.47	2.33
21	There is the ability to clarify the space and identify people due to the appropriate dimensions in the classroom space.	9	13.95	1
22	There is the ability to clarify the space and identify people due to the appropriate dimensions in the main hall space.	10	13.83	1.15

Item	Sub-indicator	Overall Rank	Average Rank	Gap
23	There are good spatial features in the classroom, hall, and hallway space, such as distinct geometry, rhythm, repetition, order and symmetry, and so on.	16	11.87	0.69
24	Cleaning and repairing school equipment	17	11.82	-2.63
25	The beauty of the school atmosphere	21	11.08	2.26
26	The school does not have any bad activities.	20	11.42	0.51

According to this table, the significance level of the coefficient of correlation test between the sense of security and the indicators of supervision, access control, territoriality, and space quality is less than 0.05. Therefore, it can be concluded that there is a significant direct relationship between the sense of security and the above-mentioned indicators with a 95% confidence level. On the other hand, the significance level of the coefficient of correlation test between a sense of security and activity, management, and maintenance is more than 0.05, indicating the lack of a significant relationship between sense of security and activity, management, and maintenance with a 95% confidence level. According to correlation coefficients, indicators can be prioritized as access control, supervision, territoriality, space quality, and activity. The results indicate a high correlation between access control, supervision, territoriality, space quality, and weak correlation of activity variables. The table "Average rankings of sub-indicators for students" shows that from the students' point of view, the school has a guard, "the possibility of the teaching staff supervising the closed space" has the highest rank, and the indicator of "sharp corners and out-of-sight corners" has the lowest rank.

The greatest difference in the satisfaction of teachers and students is observed in terms of the possibility of recognizing the access path of the corridor and the area of the hall and the least difference in terms of the lighting of the hall, etc., the possibility of seeing different corners of the closed space, such as the end of corridors and side halls.

Table 6. Results of Descriptive Analysis

Indicator	Average Rank	
Supervision	56.63	Students
	87.41	Teachers
Access Control	56.1	Students
	92.59	Teachers
Territoriality	55.88	Students
	83.5	Teachers
Activity	56.84	Students
	85.41	Teachers
Space Quality	57.31	Students
	80.77	Teachers
Management and Maintenance	57.67	Students
	77.27	Teachers

Table 5 shows the average rank of each of the indicators for students and teachers. Accordingly, according to the median and mean of the rank obtained by the Mann-Whitney U test, teachers 'satisfaction is higher than students'. In other words, teachers are more satisfied with the criteria studied.

H3: There is a significant difference between the favorable situation from the perspectives of teachers and students. Mann-Whitney U test was used to test this hypothesis. H0 and H1 can be defined as follows:

H_0: The average ranks obtained from the perspectives of students and teachers are the same.

H_1: The average ranks obtained from the perspectives of students and teachers are not the same.

The results of the calculations are recorded in the table below.

Table 7. Mann-Whitney U Test and Cohen's D Effect Size Results

	Supervision	Access Control	Territoriality	Activity	Space Quality	Management and Maintenance
Mann-Whitney Statistic	281.5	224.5	302.5	303.5	354.5	393
Significant Level	0.003	000	0.007	0.006	0.023	0.045
Z	-2.935	-3.483	-2.698	-2.739	-2.274	-2.007
Cohen's D Effect Size	-0.27	-0.32	-0.246	-0.25	-0.209	-0.184

According to the table above, the significance level of the test is less than 0.05 for all indicators. Therefore, H0 is rejected. Therefore, with a 95% confidence level, it can be concluded that the average grade point average of the desired status in the indicators is not the same between students and teachers, but it is higher in teachers than students. According to Cohen's effect size, the largest difference is observed in the access control indicator and the smallest difference in the management and maintenance and space quality indicators.

H4: There is a significant difference between the mean of the desired situation and the current situation of all six indicators from teachers' perspective.

To test this hypothesis, a t-test was used for paired samples. Since the significance level of the t-test for all six indicators is less than 0.05, it can be concluded that there is a significant difference between the mean of the optimal position and the status of all six indicators with a 95% confidence level. Since the paired difference was positive, it can be concluded that the mean of the desired situation is higher than the average of the current situation.

Table 8. Paired Two-Sample T-Test for H4

	Mean Paired Difference	SD	SE	Test Statistic	DOF	Significance Level
Supervision	0.89	0.708	0.213	4.187	10	0.002
Access Control	0.242	0.301	0.09	2.667	10	0.024
Territoriality	0.675	0.723	0.218	3.098	10	0.011
Activity	0.545	1.368	0.412	3.746	10	0.004
Space Quality	0.939	0.997	0.30	3.122	10	0.011
Management and Maintenance	1.33	0.966	0.291	4.577	10	0.001

H5: There is a significant difference between the mean of the desired situation and the current situation of all six indicators from students' perspective.

To test this hypothesis, t-test was used for paired samples. Since the significance level of t-test for supervision indicator is more than 0.05, it can be concluded that there is no significant difference between the mean of optimal status and status in supervision indicator with a 95% confidence level. Since the significance level of t-test for the other five indicators is less than 0.05, it can be concluded that there is a significant difference between the mean of the optimal situation and the situation in the other five indicators with a 95% confidence level in the other five indicators. Since the paired difference for the access control indicator was negative, it can be concluded that the average of the desired situation is lower than the average of the current situation. Since the paired difference was positive for the other indicators, it can be concluded that the mean of the desired situation is higher than the average of the current situation.

Table 9. Paired Two-Sample T-Test for H5

	Mean Paired Difference	SD	SE	Test Statistic	DOF	Significance Level
Supervision	-0.147	1.2	0.116	1.274	106	0.205
Access Control	-0.442	1.33	0.129	-3.416	106	0.001
Territoriality	0.374	1.06	0.104	3.59	104	0.001
Activity	0.866	1.14	0.11	7.833	106	0
Space Quality	0.563	1.37	0.132	4.255	106	0
Management and Maintenance	1.295	1.47	0.142	9.077	106	0

Table 10. The Extent of the Gaps between the Senses of Security Indicators from Students' Perspectives

	The Average Score for the Current Status	SD	The Average Score for the Expected Status	SD	Gap
Sense of Security	4.18	0.75	4.54	0.68	0.36
Supervision	3.65	0.61	4.55	0.68	0.9
Access Control	4.303	0.959	4.53	0.68	0.227
Territoriality	3.87	0.796	4.54	0.68	0.67
Activity	3	1.06	4.52	0.68	1.52
Space Quality	3.606	0.814	4.54	0.934	0.934
Management and Maintenance	3.48	0.981	4.81	0.404	1.33

Table 11. The Extent of the Gaps between the Senses of Security Indicators from the Perspective of Teachers

	The Average Score for the Current Status	SD	The Average Score for the Expected Status	SD	Gap
Supervision	3.288	0.566	3.43	1.24	0.142
Access Control	3.765	0.858	3.33	1.106	-0.435
Territoriality	3.276	0.719	3.65	1.099	0.374
Activity	2.734	0.773	3.60	1.138	0.866
Space Quality	3.265	0.878	3.84	1.133	0.575
Management and Maintenance	2.916	0.99	4.19	1.067	1.274

H6: There is a significant difference between the indicators from the teachers' point of view.
To test this hypothesis and prioritize the indicators, Friedman's test was used. H0 and H1 can be defined as follows:

$\begin{cases} H_0: \text{The average ranks are the same between the indicators} \\ H_1: \text{The average ranks are not the same between the indicators} \end{cases}$

The results of the calculations are recorded in the table below.

Table 12. Friedman's Test for the Security Indicators from Teachers' Point of View

Chi-squared Statistic	16.281
Degree of Freedom (df)	5
Significance Level (sig)	0.006

According to the table above, the significance level of the test (sig = 0.006) is less than 0.05. With a 95% confidence level, it can be concluded that the ranking of the indicators is not the same for the respondents. Prioritization of indicators from the respondents' point of view is presented in the following table:

Table 13. Prioritization of the Security Indicators from the Perspective of Teachers

Indicator	Average Rank (Friedman's Test)	Priority
Supervision	3.41	3
Access Control	5.14	1
Territoriality	4	2
Activity	2.23	6
Space Quality	3.32	4
Management and Maintenance	2.91	5

H7: There is a significant difference between the indicators from the students' point of view.
To test this hypothesis and prioritize the indicators, Friedman's test was used. H0 and H1 can be defined as follows:

$\begin{cases} H_0: \text{The average ranks are the same between the indicators} \\ H_1: \text{The average ranks are not the same between the indicators} \end{cases}$

The results of the calculations are recorded in the table below.

Table 14. Friedman's Test for Security Indicators from Students' Perspectives

Chi-squared Statistic	112.269
Degree of Freedom (df)	5
Significance Level (sig)	0.00

According to the table above, the significance level of the test (sig = 0.00) is less than 0.05. With a 95% confidence level, it can be concluded that the ranking of the indicators is not the same for the respondents. Prioritization of indicators from the respondents' point of view is presented in the following table:

Table 15. Prioritization of the Security Indicators from Students' Perspectives

Indicator	Average Rank (Friedman's Test)	Priority
Supervision	3.69	2
Access Control	4.81	1
Territoriality	3.63	3
Activity	2.32	5
Space Quality	3.63	3
Management and Maintenance	2.92	4

The results indicate that access control has the highest rank and the activity indicator has the lowest rank from the students' point of view.

6. CONCLUSION

In any research, it is necessary to examine the quality of services provided and the need to know the current situation and plan to improve the future situation. This goal was pursued in this study, emphasizing high school security and efforts to respond to all human perceptions presented in the model. According to the results of data analysis, it can be stated that in the set of high schools, the territoriality indicator has the highest correlation coefficient with security, and the access control indicator has the lowest correlation coefficient with a sense of security from the students' point of view. On the other hand, in the students' prioritization, the sub-indicator "School has a guard," the possibility of supervision of teaching staff in the closed space has the highest average rank, while the indicator of "sharp corners and far-sighted corners" is at the lowest rank. There is (is not) a significant difference between the perceptions of students and teachers in two aspects, namely, lighting and illumination of hall spaces and so on. The various corners of the enclosed space, such as the end of the corridors and the side hall, cannot be seen, with the perception being approximately close to each other. However, there is the greatest perceptual difference in terms of the possibility of distinguishing the access path of the corridor and the boundary of the hall. According to Cohen's effect d size, the largest difference in satisfaction with the desired condition is related to the access control indicator, and the least difference in satisfaction is seen in management, maintenance, and space quality. According to the results of data analysis, it can be said that the set of high schools in question had gaps in all indicators in terms of security and could not meet the expectations of users. Users' perceptions are closer to their expectations in some indicators and sub-indicators, and their perceptions and expectations are far apart in others. Also, the results indicate the largest gap in the management and maintenance indicator and the lowest gap in the supervision indicator from the students' point of view. On the other hand, in the prioritization from the students' point of view, access control and supervision indicators have the highest average rank, while the activity indicator has the lowest mean rank among other indicators.

Therefore, to improve the current situation and provide better services to users, the issue of "reducing gaps" in future planning and related investments should be given priority. This prioritization can serve as a basis for determining the starting point and ending point of a quality improvement program in the current high school situation. This study tried to qualitatively examine the criteria of interior spaces by examining the perception of users in Bojnourd high schools. These results should be such that they can be used as influential factors in designing educational spaces.

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