International Journal of Multiphysics
Volume 18, No. 4, 2024
ISSN: 1750-9548

The Impact of Environmental Design on Crime Commitment by Inmates in Shahr-e-Kord Public Prison

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Abstract

Background and Objective: Environmental design plays a significant role in human behavior and can influence crime rates in various environments, including prisons. This study aimed to investigate the impact of environmental design on crime commitment by inmates in Shahr-e-Kord Public Prison.

Method: This research is applied in terms of purpose and employs a mixed-method exploratory sequential design, beginning with qualitative and followed by quantitative analysis. To ensure the reliability of interviews, member checking and peer review methods were utilized. The quantitative population included male prisoners aged 20 to 60 and prison staff in Shahr-e-Kord. The sample size comprised 260 respondents (200 prisoners and 60 staff), selected through proportional sampling. The data collection tool for this phase was a researcher-made questionnaire. The validity of the questionnaire was assessed through face and content validity, and its reliability was confirmed using Cronbach's alpha method. Data were analyzed using exploratory factor analysis with the maximum likelihood method.

Findings and Conclusion: The results revealed five underlying factors influencing crime commitment: lack of cultural and employment spaces, insufficient classification spaces for inmates, mismatch between existing spaces and prisoners' needs, frequent interaction among inmates with different criminal backgrounds, and the presence of hidden or poorly monitored spaces in the prison's design. Additionally, a key superficial factor identified was reducing interactions between inmates involved in different types of crimes, which could effectively decrease crime commitment in Shahr-e-Kord Public Prison.

Keywords: Environmental Design, Cultural and Employment Spaces, Inmate Classification, Prisoners' Needs, Prison Supervision

Introduction

The growing number of incarcerated individuals, as highlighted by the latest statistics from the International Centre for Prison Studies, reveals that over 10 million people are imprisoned across 218 countries worldwide. Among these, Iran ranks as the eighth country with the highest prison population, housing 285,624 inmates (International Centre for Prison Studies). The number of prisoners in Iran continues to rise annually. Statistics indicate that between 1980 and 2011, the number of prisoners increased tenfold, while the population of the country grew by only 60% during the same period (Heidari, Ostad & Niyazmand, 2013: 3-8). Prisons in Iran generally do not follow a unified design model and are constructed based on regional climate, environmental conditions, and even administrative preferences. Shahr-e-Kord Prison, categorized as a closed prison, stands out

with its unique architectural features. A review of the prison's history reveals various incidents and crimes committed by inmates.

Environmental design theory posits that appropriate design of living and working spaces can reduce the likelihood of crimes occurring within built environments, a concept known as "crime prevention through environmental design" (Mahmoudi Janki & Ghorchibegi, 2009: 355-358). This theory assumes that criminals are rational actors who make deliberate choices to commit crimes. Therefore, influencing situational and environmental factors is more effective than attempting to reform individuals' character or address human weaknesses. A practical solution to crime prevention lies in reducing criminal opportunities. Environmental design can be defined as "the effective and appropriate design of the built environment to reduce crime and the fear of crime" (Veysi & Farahmand, 2018: 87-93). In other words, proper design and optimal use of space can not only prevent crime but also improve quality of life and reduce fear of crime.

From the perspective of environmental determinism, it can be argued that the environment significantly affects human behavior, perception, and emotions. According to this viewpoint, every environmental stimulus elicits a specific response, and environmental conditions are primarily related to climatic and geographical factors (Pakzad, 2006: 119). Statistics show that criminals seek low-risk opportunities to commit crimes. For instance, prisons often serve as environments where inmates acquire negative experiences, perpetuating a cycle of harmful behavior (Ghalekhanbaz, Khazaei, Afshari, Soheilizadeh & Farazi, 2013: 185-191).

In Iran, significant financial resources are allocated annually to combat crime and maintain prisons. However, these expenditures have had little impact on reducing the prison population. Currently, prison management strategies are increasingly influenced by environmental design considerations. The prison population comprises many individuals with low emotional resilience, little hope for successful reintegration, and pessimism toward themselves and their future. These conditions exacerbate internal prison issues, inmate dissatisfaction, and crime rates (Pakzad, 2006: 119).

Preventive policies, programs, and measures against crime are crucial, especially given the inefficiencies of the criminal justice system in combating crime. One notable preventive strategy is "crime prevention through environmental design," first introduced by American criminologist C. Ray Jeffery. This approach emphasizes the effective and purposeful design of spaces and environments to reduce criminal opportunities, alleviate fear of crime, and enhance quality of life (Mahmoudi Janki & Ghorchibegi, 2009: 355-358). The theory advocates optimizing surveillance, clearly defining territorial boundaries, and fostering a positive environmental image to deter potential offenders.

Environmental design theory asserts that crime is not limited to deterministic and immutable natural environmental factors; instead, it is a social phenomenon influenced by the economic, social, cultural, and political conditions of society. For example, "Quetelet" and "Guerry" utilized statistics to explore the relationship between crime and geographic environment, concluding that crime is inherently linked to human behavior and shaped by environmental influences (Mahmoudi Janki & Ghorchibegi, 2009: 355-358).

As a key component of crime prevention, environmental design is complex and interdependent on social, economic, and cultural dimensions. Various theories, including environmental criminology and environmental design, highlight the significance of elements such as territoriality, surveillance, access control, target hardening, and supportive activities (Kamraniya, 2006: 9-11).

According to environmental design theory, the physical environment plays a dual role in enabling or preventing crime. For example, Shahr-e-Kord Prison is designed with underground tunnels connecting its various sections. Inmates must traverse these tunnels for certain movements within the facility. These tunnels, along with other environmental factors such as ceiling heights, indoor lighting, corridor layouts, room ventilation, building materials, the absence of green spaces, and the lack of open areas, have long-term adverse psychological effects on inmates, fostering anger, aggression, and criminal behavior within the prison (Mohammadnasl, 2019: 25-47).

This research aims to identify the environmental design elements of Shahr-e-Kord Prison and assess their impact on criminal behavior among male inmates between 2011 and 2021. The ultimate goal is to reduce crime rates,

enhance the aesthetic quality of spaces, and improve inmates' quality of life. In other words, by employing environmental design principles, the study seeks to reduce opportunities for criminal behavior and establish better behavioral monitoring. As the first study on effective environmental design in reducing crime in Iranian prisons, this research endeavors to accurately identify influential environmental factors and provide a foundation for mitigating crimes committed by inmates within the prison.

Research Background and Theoretical Foundations

Research Background

Numerous studies have been conducted on the impact of environmental design on crime rates. Below are some of the key studies closely related to the present research:

1. **Qeshlaqpour and Babakhani (2021):** In their study titled *"Analyzing Crime Prevention Factors through Environmental Design in Mehr Housing: A Case Study of Mehr Town, Nazarabad,"* they examined the role of environmental design in enhancing security and reducing crime in residential areas. Their findings highlighted five key factors: natural surveillance, social cohesion, human-centered design, service provision, and identity enhancement. Recommendations such as creating population-attracting activities and appropriate public spaces were proposed to improve the security of these environments.
2. **Abedi and Mokhtari (2020):** Their research, *"The Impact of Prison Architecture and Environment on Offenders,"* emphasized the significant role of prison design in shaping inmate behavior and rehabilitation. They suggested that prison architecture should prepare inmates for reintegration into society by providing spaces that foster psychological peace, security, and skill enhancement.
3. **Shahabi (2020):** In the study titled *"Prison Architecture with a Crime Reduction Approach,"* Shahabi focused on the importance of designing prisons to promote rehabilitation rather than merely enforcing restrictions. The research stressed the need for spaces that instill hope and empower inmates socially and psychologically.
4. **Vatan-Khah et al. (2019):** Their research, *"Intra-Organizational Actions of Law Enforcement for Crime Prevention through Environmental Design,"* underlined the importance of environmental design principles in reducing urban crime. The study recommended the development of coordinated guidelines and staff training to enhance the effectiveness of these measures.
5. **Mahmoudi Janki and Ghorchibegi (2009):** In their article titled *"The Role of Environmental Design in Crime Prevention,"* the authors highlighted the significance of environmental design as an effective strategy for reducing crime. They emphasized the need to optimize surveillance opportunities, define territorial boundaries, and enhance the environmental image to deter potential offenders.
6. **Ronald (2008):** In the article *"The Theory of Crime Prevention through Environmental Design,"* Ronald demonstrated that most criminal opportunities arise from weaknesses in environmental design. He argued that modifying environmental designs could effectively prevent crime and addressed critiques of the theory, such as crime displacement, while analyzing successful implementations in various countries.
7. **Armitage et al. (2018):** Their study, *"Crime Prevention through Environmental Design (CPTED) and Retail Crime,"* focused on the impact of environmental design on reducing retail crimes. The research identified natural surveillance and access control as critical factors in mitigating crimes in commercial environments, showing that optimizing these aspects significantly reduces crime rates.
8. **Ekblom (2011):** In the article *"Deconstructing CPTED… and Reconstructing It for Practice, Knowledge Management, and Research,"* Ekblom provided an in-depth analysis of CPTED principles. He emphasized the importance of understanding the mechanisms behind these principles in various environments to apply them effectively. The study offered suggestions for improving the practical application of CPTED.
9. **Schneider and Kitchen (2013):** Their study, *"Putting Crime Prevention through Environmental Design into Practice via Planning Systems,"* compared the experiences of the United States and the United

Kingdom in implementing CPTED in urban design. They demonstrated how proper planning and execution of CPTED principles could significantly reduce crime and enhance urban security.

These studies collectively highlight the importance of environmental design in crime prevention and the various strategies employed across different contexts. They provide a strong foundation for exploring the impact of environmental design on crime commitment by inmates in Shahr-e-Kord Prison.

Theoretical Foundations

To strengthen the theoretical foundations regarding the impact of environmental design on crime commitment in prisons, a deeper exploration of existing theories is necessary. This section analyzes the role of environmental design in altering inmate behavior and preventing crime based on more recent and comprehensive studies. The theoretical foundations are expanded across four major domains: **Behavioral Theory**, **Opportunity Theory**, **Stress Theory**, and **Social Theory**, offering diverse perspectives.

1. Behavioral Theory

Behavioral theory, rooted in principles of environmental psychology, emphasizes that individual behavior, especially in closed environments such as prisons, is significantly influenced by environmental conditions and stimuli. Environmental psychology studies the interaction between humans and their physical surroundings, highlighting how chaotic and stressful environments can provoke aggressive and criminal behavior.

Stress-inducing factors such as cramped spaces, insufficient lighting, and a lack of recreational or educational opportunities are likely to increase violence among inmates (Arabi & Naseri, 2020: 533-519). Conversely, well-designed prison spaces with open areas, adequate natural light, and access to rehabilitative programs can promote psychological well-being. Programs incorporating spaces for positive social interactions, sports activities, and learning opportunities have shown to positively influence inmate behavior and reduce tendencies toward violence.

Behavioral theory stresses that prison designs should focus on fostering rehabilitative and educational opportunities that positively affect inmate behavior.

2. Opportunity Theory

Opportunity theory, situated within the domain of environmental criminology, posits that crime occurs due to the availability of suitable opportunities. Closely tied to **Situational Crime Prevention**, this theory asserts that criminals seek environments offering favorable conditions for crime.

In prisons, environmental design should aim to eliminate opportunities for crime. For example, reducing blind spots, installing surveillance cameras in sensitive areas, and designing open spaces with wide visibility can significantly decrease criminal activities (Armitage et al., 2018: 123-154).

Additionally, **access control** plays a pivotal role. Restricted access corridors or areas limited to specific groups of inmates can minimize opportunities for unauthorized movements and criminal activities. **Natural surveillance**, where inmates are continuously observable, also serves as a vital tool in mitigating crime. Opportunity theory underlines that prison environments should minimize opportunities for criminal behavior through effective design.

3. Stress Theory

Stress theory highlights that environmental stressors can lead to criminal and violent behavior among inmates. Prisons, with their confined spaces, lack of privacy, poor ventilation, inadequate natural light, and limited open areas, often become highly stressful environments. These stressors can escalate anxiety, depression, and psychological instability, ultimately resulting in aggressive behavior and crime within prisons (Ekblom, 2011: 7-28).

Research shows that suitable environmental designs can alleviate stress. For instance, integrating green spaces and access to natural light reduces stress levels and promotes mental well-being. Recreational and exercise areas can provide outlets for pent-up energy, reducing internal tensions and the likelihood of crimes. Stress theory emphasizes the creation of calm, controlled environments to reduce violent behavior and aid in inmate rehabilitation.

4. Social Theory

Social theory argues that individual behavior is influenced by social interactions and the groups they are part of. In prisons, communities of inmates may form either positive or negative social groups. For instance, criminal gangs can emerge within prisons, fostering negative behaviors and reinforcing criminal activities.

According to this theory, prison designs should aim to discourage the formation of criminal groups while promoting positive social interactions. For example, segregating inmates based on the type of crime committed and reducing overcrowding can diminish the chances of negative group dynamics. Additionally, creating shared educational and recreational spaces fosters positive interactions, reducing the likelihood of criminal behavior (Schneider & Kitchen, 2013: 9-30).

Impact of Environmental Design on Social and Psychological Behavior of Inmates

Research has shown that environmental design significantly affects the social and psychological behavior of inmates, playing a key role in reducing violence and crime in prisons. Various environmental elements, such as landscape design and lifestyle features, influence inmate behavior and mental health. Below are some specific impacts of environmental design based on relevant studies:

1. **Promoting Calmness:**
   Designs incorporating calming, open spaces with access to natural elements like sunlight and greenery help reduce stress and anxiety among inmates. Such designs improve mood and psychological peace, decreasing violent behavior (Roshani & Hasani, 2022: 17-30).
2. **Enhancing Focus and Attention:**
   Environmentally diverse spaces with variations in colors, patterns, and artistic elements reduce mental fatigue and redirect inmate energy toward constructive activities. Innovative and engaging designs attract inmate attention and alleviate psychological stress (Roshani & Hasani, 2022: 17-30).
3. **Facilitating Social Interaction:**
   Socially-oriented spaces, such as meeting areas and green courtyards, promote positive interactions among inmates and with their families. Such designs reduce social isolation and, in turn, decrease criminal tendencies (Roshani & Hasani, 2022: 17-30).
4. **Encouraging Autonomy:**
   Allowing inmates to participate in shaping their environment fosters autonomy and decision-making. Flexible spaces that inmates can personalize instill a sense of control, contributing to improved behavior and reduced negative tendencies (Roshani & Hasani, 2022: 17-30).
5. **Improving Psychological Well-being:**
   Spaces designed with soothing colors, appropriate lighting, and spiritual elements create a sense of hope and motivation, aiding in behavioral reform and preparing inmates for reintegration into society (Roshani & Hasani, 2022: 17-30).

Proposed Models for Prison Environmental Design

To enhance security, reduce tensions, and accommodate inmate needs, the following models are proposed:

1. **Cell-as-Home Concept:**
   Each cell is designed as a personal space resembling a home, promoting dignity and calmness. Common areas, such as recreational spaces, libraries, educational centers, and clinics, support social activities and inmate mobility.
2. **Natural Lighting Integration:**
   Designs emphasize natural lighting through skylights, large windows, and open spaces, fostering psychological well-being and physical health.

3. **Open Environment Concept:** Incorporating open spaces and green areas within prisons improves inmate mental health. Recreational zones, gardens, and spaces for nature exposure create therapeutic environments.

4. **Efficient Functional Flow:** Layouts prioritize proximity of public spaces to cells, minimizing energy and time spent accessing services and facilitating regular interactions between staff and inmates.

These models demonstrate that effective environmental design can reduce stress, improve behavior, and create conditions for successful rehabilitation and reintegration into society.

Research Methodology

The present research is applied in terms of its purpose and employs an exploratory sequential mixed-methods approach, starting with qualitative and followed by quantitative methods. The qualitative study population consists of academic experts, with a sample of 10 experts selected using purposive sampling. Data collection tools include questionnaires. To ensure the reliability of interviews, two methods were used: member checks and peer review. The statistical population of the study includes male inmates aged 20 to 60 years from the general prison in Shahr-e-Kord and male staff working or having work experience in the same prison. The research sample consists of 200 male convicted inmates aged 20 to 60 years and 60 male staff members, selected using a convenience sampling method.

The data collection tool at this stage includes a researcher-made questionnaire. To evaluate the validity of the questionnaire, face and content validity were employed, while its reliability was assessed using Cronbach's alpha method. For statistical data analysis, exploratory factor analysis (EFA) with the maximum likelihood estimation method was used.

The researcher-made questionnaire includes a total of 28 factors and questions related to the general information of respondents. Since the proposed model lacked sufficient comprehensiveness, semi-structured interviews were conducted with 10 experts in the fields of law, social harm, and architecture. For this purpose, the researcher designed structured interview questions aligned with the research model. The questions were aimed at identifying factors and indicators related to the impact of environmental design on crime commission.

To ensure the validity of the data collection tool, the questions were developed according to the specified framework of the research approach. Additionally, eight of the aforementioned experts reviewed the final report and provided suggestions, which were incorporated into the revisions. **To determine the reliability of the interviews,** (continuation of sentence incomplete).

The interviews' reliability was also ensured through two methods: member checking and peer review. In the peer review method, the questionnaire was provided to four experts for evaluation, ultimately confirming the relevance and accuracy of the identified concepts. Consequently, 28 items were proposed for examining the subject.

The second stage involves factor analysis of the finalized items measuring the impact of environmental design on crime commission in the general prison of Shahr-e-Kord using the maximum likelihood estimation method. The statistical population at this stage includes 260 individuals comprising inmates and staff of the Shahr-e-Kord prison.

The research data collection tool is a researcher-made questionnaire. The items regarding the impact of environmental design on crime commission were designed within a five-point Likert scale format. Face and content validity were utilized to ensure that the questionnaire contained an adequate number of appropriate questions for measuring the impact of environmental design on crime commission. To this end, the feedback of eight academic experts was incorporated to address deficiencies in the questionnaire.

The construct validity of the tool was assessed using exploratory factor analysis (EFA), and the overall reliability of the items was calculated using Cronbach's alpha, which yielded a value of 0.93. Since this value exceeds 0.70, the measurement tool's reliability is considered acceptable. Additionally, exploratory factor analysis

was used to confirm the questionnaire's validity. During the EFA process, the items measuring environmental design were grouped into six factors through principal component analysis and varimax rotation. Based on the eigenvalues, the first to sixth factors accounted for the highest percentages of variance, explaining the impact of environmental design on crime commission.

The overall model fit index was calculated using maximum likelihood estimation. The **Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.81**, indicating that the sample size was sufficient for factor analysis. Bartlett's test of sphericity also confirmed the data's suitability for factor analysis, demonstrating the feasibility of extracting factors. Finally, six factors were derived from the exploratory factor analysis, which were named based on the content of the items. These six factors collectively explained the majority of the variance in the questionnaire.

Findings

To investigate the impact of environmental design on crime commission among inmates in the general prison of Shahr-e-Kord, a 28-item questionnaire was initially designed. The purpose of this questionnaire was to measure various dimensions of environmental design and its effects on inmates' criminal behaviors. In the subsequent phase, to analyze the data more precisely and identify influential factors, feedback from inmates and prison staff was collected, and the questionnaire underwent factor analysis.

Preliminary Tests:

To ensure the internal consistency of the items and the suitability of the data for statistical analysis, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were conducted. The results indicated that factor analysis was feasible, with the KMO index at **0.815** and a significance level of **0.000**, confirming that the data were appropriate for factor analysis.

Factor Analysis Procedure:

After confirming data adequacy, maximum likelihood estimation and varimax rotation were used to analyze the data and optimize the interpretation of extracted factors. The results revealed **six main factors**, each explaining a portion of the total variance. Collectively, these six factors accounted for **35.070% to 69.378% of the total variance** in the study variables.

Factor Categorization and Naming:

Each factor was associated with specific items, categorized and named as follows:

1. **Lack of Cultural and Employment Spaces**
    - **Associated Items:** 14
    - This factor highlights deficiencies in educational, cultural, and employment-generating spaces within the prison. The lack of these facilities fosters a sense of demotivation and helplessness among inmates, potentially exacerbating criminal behaviors.
2. **Inadequate Classification of Inmates**
    - **Associated Items:** 9
    - This factor reflects insufficient categorization of inmates based on their crime type, risk level, and sentence duration. A lack of proper classification can increase problematic interactions among inmates with varying offense levels, leading to higher crime rates.
3. **Minimizing Contact Among Inmates with Varied Offenses**
    - **Associated Items:** 9
    - This factor emphasizes the importance of limiting interactions among inmates with different criminal histories to reduce the reinforcement of deviant behaviors through improper associations.

4. **Mismatch Between Existing Spaces and Inmates' Needs**
    - **Associated Items:** 5
    - This factor addresses the inadequacy of existing prison spaces in meeting the actual needs of inmates. For example, insufficient spaces for hygiene, sleep, or recreation can negatively impact inmates' mental health and behavior, increasing tensions and criminal acts.
5. **Excessive Interaction Among Inmates and Increased Violations**
    - **Associated Items:** 5
    - This factor examines the impact of unchecked interactions among inmates, which can lead to the formation of criminal networks and an increase in violations within the prison.
6. **Presence of Hidden or Poorly Supervised Areas**
    - **Associated Items:** 4
    - This factor pertains to spaces within the prison that lack adequate supervision, offering opportunities for covert and criminal activities among inmates.

Implications of Findings:

The analysis using varimax rotation and factor extraction identified six core factors influencing the relationship between environmental design and crime commission among inmates in the general prison of Shahr-e-Kord. These factors directly affect inmate behavior and interactions. Modifications in the prison's environmental design can potentially reduce criminal behaviors and improve inmates' psychological and social conditions.

Table 1: Final Model for Measuring the Impact of Environmental Design on Crime Commission in Shahr-e-Kord General Prison

Factor	Number of Items	Explained Variance Percentage
Lack of Cultural and Employment Spaces	14 items	69.378%
Inadequate Classification of Inmates	9 items	65.217%
Reducing Contact with Diverse Crimes	9 items	58.921%
Mismatch Between Spaces and Inmates' Needs	5 items	58.921%
Excessive Interaction and Increased Violations	5 items	41.593%
Presence of Hidden Spaces and Poor Supervision	4 items	35.070%

The results indicate that environmental design and addressing these factors can have a significant impact on reducing criminal behaviors and improving the conditions of inmates.

Table 2: Extracted Factor Matrix

Factor	Item Number	Factor Loading	Factor	Item Number	Factor Loading
Factor 1	27	0.851	Factor 3	24	0.395
	21	0.800		17	0.438
	25	0.794		19	0.469
	22	0.783		5	0.725
	23	0.729		12	0.694
	26	0.720		20	0.594
	24	0.705		11	0.466
	28	0.653		8	0.427
	17	0.600		10	0.300
	16	0.595	Factor 4	1	0.536
Factor 2	19	0.588		3	0.716
	15	0.570		2	0.631

	20	0.302		8	0.565
	8	0.315		7	0.519
Factor 5	28	0.419	Factor 6	16	0.336
	16	0.472		11	0.425
	14	0.773		9	0.839
	13	0.748		10	0.635
	6	0.743		7	0.539
	18	0.704		15	0.387
				1	0.641
				2	0.411
				10	0.367
				4	0.802

Based on the conceptual and substantive similarities among the extracted factors, foundational factors influencing the impact of environmental design on crime commission have been proposed. Consequently, the following five foundational factors have been identified:

1. **Lack of Cultural and Employment Spaces**
2. **Inadequate Classification of Inmates**
3. **Mismatch Between Existing Spaces and Inmates' Needs**
4. **Excessive Interaction Among Inmates and Increased Violations**
5. **Presence of Hidden or Poorly Supervised Spaces**

Additionally, **reducing contact among inmates** has been identified as an influential **secondary factor** for reducing crime in the general prison of Shahr-e-Kord.

The average impact of the factors was then assessed among 260 individuals, including staff, experts, trainers, and inmates. The comparison of the mean impact of the factors from their perspectives was analyzed. According to **Table 2**, the results indicate a significant difference in the mean scores of the factors as perceived by these groups.

Table 3: Results of Respondents' Mean Comparison
Analysis of Variance (ANOVA)

Factors	Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Significance Level (p-value)
Lack of Cultural and Employment Spaces	Between Groups	13.493	3	4.498	4.73	0.003
	Within Groups	243.030	256	0.949		
	Total	256.523	259			
Inadequate Classification of Inmates	Between Groups	15.533	3	5.178	6.81	0.000
	Within Groups	194.568	256	0.760		
	Total	210.100	259			
Reducing Contact Among Inmates	Between Groups	14.186	3	4.729	6.13	0.000
	Within Groups	197.475	256	0.771		
	Total	211.661	259			

Mismatch Between Existing Spaces and Inmates' Needs	Between Groups	7.456	3	2.485	3.11	0.027
	Within Groups	204.322	256	0.798		
	Total	211.778	259			
Excessive Interaction and Increased Violations	Between Groups	32.440	3	10.813	17.23	0.000
	Within Groups	160.578	256	0.627		
	Total	193.018	259			
Presence of Hidden or Poorly Supervised Spaces	Between Groups	52.288	3	17.429	18.71	0.000
	Within Groups	238.406	256	0.931		
	Total	290.694	259			

The analysis shows significant differences in the mean scores of the factors across the groups, with p-values less than 0.05 for all factors. This indicates that the respondents perceive the impact of these factors differently.

Table 4: Comparison of Respondents' Mean Scores by Influential Factors

Factor	Respondent	Mean	Factor	Respondent	Mean
Lack of Cultural and Employment Spaces	Staff	3.63	Mismatch Between Existing Spaces and Inmates' Needs	Staff	3.43
	Expert	3.79		Expert	3.80
	Trainer	3.12		Trainer	3.67
	Inmate	3.09		Inmate	3.13
	Total	3.21		Total	3.22
Inadequate Classification of Inmates	Staff	3.50	Excessive Interaction and Increased Violations	Staff	3.55
	Expert	3.92		Expert	3.90
	Trainer	3.44		Trainer	3.07
	Inmate	2.99		Inmate	2.74
	Total	3.12		Total	2.93
Reducing Contact Among Inmates	Staff	3.71	Presence of Hidden or Poorly Supervised Spaces	Staff	3.60
	Expert	4.03		Expert	4.25
	Trainer	3.13		Trainer	2.94
	Inmate	3.20		Inmate	2.62
	Total	3.31		Total	2.85

This table illustrates the mean scores of respondents (staff, experts, trainers, and inmates) for each of the identified influential factors. The means vary across respondent groups, reflecting different perspectives on the impact of environmental design factors on crime commission.

Discussion and Conclusion

The primary aim of this study was to examine the impact of environmental design on crime commission among inmates in the general prison of Shahr-e-Kord. For this purpose, a 28-item questionnaire was designed to evaluate various aspects of how environmental design influences inmate behavior. Following data analysis using factor analysis, six main components were identified as having a direct impact on crime commission in the prison environment. These components include:

1. Lack of cultural and employment spaces
2. Inadequate classification of inmates
3. Reducing contact among inmates with different types of crimes
4. Mismatch between existing spaces and the needs of inmates
5. Excessive interaction among inmates with varying offenses
6. Presence of hidden or poorly supervised spaces

The reliability analysis of the questionnaire, using Cronbach's alpha, showed that the tool had acceptable reliability, with a high level of internal consistency among the questions. Additionally, the model fit indices were tested using the maximum likelihood estimation method, which indicated that the research model was within an acceptable range, with fit indices close to ideal criteria.

In this study, foundational and secondary environmental design factors affecting crime commission were categorized. Foundational factors include lack of cultural and employment spaces, inadequate inmate classification, mismatch between existing spaces and inmate needs, excessive interaction among inmates with different crimes, and poorly supervised or hidden spaces—all of which had a major influence on inmate behavior. In contrast, the secondary factor—reducing contact among inmates with different offenses—was shown to help reduce crime rates in the general prison of Shahr-e-Kord.

A comparison of respondents' mean scores revealed that prison staff assessed the impact of environmental design factors on crime commission as more significant than inmates did. This significant difference, with statistical errors below 0.05, suggests that experts perceive the effects of environmental design more profoundly than inmates. This discrepancy could be attributed to differing perspectives on inmates' environmental needs and the level of interactions among inmates.

This research aligns with the findings of studies by Abedi and Mokhtari (2019), Shahabi (2019), and Mahmoudi Janki and Qorchi Beigi (2009). These studies also emphasized the impact of environmental design and its role in controlling criminal behavior and rehabilitating inmates. Theoretically, this study aligns with behavioral theory, opportunity theory, and social theory, all of which highlight the influence of environmental conditions and design on behavior in confined and controlled spaces like prisons.

Environmental design plays a key role in reducing crime and reforming inmate behavior. From the findings of this study, it can be concluded that creating cultural and employment spaces, proper classification of inmates based on the type and severity of their crimes, and increased supervision of common areas can help reduce opportunities for crime. Furthermore, reducing contact among inmates with different offenses and providing educational and supportive environments can contribute to behavioral reform and reduce violence among inmates.

Recommendations

1. **Designing Cultural and Employment Spaces:**

Based on the research findings, the lack of cultural and employment spaces is a significant factor influencing crime in prisons. It is recommended that in Shahr-e-Kord General Prison and other facilities, spaces for vocational training and employment generation be established. These initiatives can enable inmates to acquire new skills and integrate into the workforce after release.

2. **Improved Inmate Classification:**

Given the impact of inadequate inmate classification on increased deviant interactions and violations, it is suggested that inmates be classified based on the type and severity of their crimes, personality, and criminal history. This measure can minimize interactions among inmates with varying criminal backgrounds, reduce the transfer of negative experiences, and create a safer environment.

3. **Enhancing Supervision of Sensitive Areas:**

The presence of hidden or poorly supervised spaces is identified as a factor contributing to crime. Therefore, it is recommended to enhance surveillance in sensitive areas such as restrooms, corridors connecting different sections, and common prison spaces. Installing surveillance cameras in a way that respects inmates' privacy while providing effective monitoring is crucial.

4. **Improving Environmental Design in Prison Facilities:**

It is suggested that new prisons and sections under construction be designed with environmental factors in mind, such as wall height, appropriate lighting, wall color schemes, and corridor layouts. These considerations can help reduce stress and prevent violent behaviors. Such modifications can improve the psychological environment of the prison and lower crime rates.

5. **Standardized Design Model for Prisons:**

To maintain consistency and adhere to security and hygiene guidelines, it is recommended that a standardized design model for prisons be developed and communicated to provinces according to regional and climatic conditions. This model should consider architectural and construction standards to aid in crime prevention within prison environments.

Acknowledgments

This article was conducted in collaboration with the Education and Research Council of the General Directorate of Prisons of Chaharmahal and Bakhtiari Province. The authors express their sincere gratitude to the members of the Education and Research Council for their support and contributions.

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