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Understanding the position of urban spatial configuration on the feeling of insecurity from crime in public spaces

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Introduction: Many studies have discussed crime and the feeling of insecurity in the public space. These studies produce diverse findings from various variables and different objects. However, the urban spatial configuration is still left unexplored in the study of insecurity from crime in the public space. The purpose of this study is to discuss the position of urban spatial configuration elements on the feeling of insecurity from crime in the public space evidenced by international literature.

Methods: This study uses a systematic review method by evaluating studies published between 1970 and 2021.

Results and Discussion: The results of this study state that studies on crime and feeling of insecurity in public spaces in urban planning and urban design context mainly evaluated the design features (crime prevention through environmental design) and Socio-demographics at micro-meso scale in the built environment. In contrast, urban spatial configuration variable or macro scale still underexplored. Studies have shown that issues will occur if policy-making and planning in urban areas ignore individual perceptions of feeling insecure regarding crime at macro scale. The findings of this study become a research gap for further studies. This study suggests that more researchers should evaluate the feelings of insecurity from crime in public spaces on a macro scale, namely the urban spatial configuration dimension, including city size, development type, the distribution pattern of population and job, degree of clustering, and landscape connectivity.

KEYWORDS

urban spatial configuration, crime, feeling of insecurity, public space, systematic review

1 Introduction

A public space is an arena for social interactions between individuals, and it impacts psychological aspects, such as comfort, tranquility, atmosphere, and security, formed in their minds (Carmona et al., 2003; Carr et al., 1992; Gallacher, 2005). A public space can act as a crime generator that creates feelings of insecurity due to interactions. Public spaces are inherently criminogenic environments that provide opportunities for crime in certain places and at certain times (Ceccato, 2016).

People are concentrated in public spaces, thereby creating opportunities for crime (Sherman et al., 1989). Crime is considered one of the causes of the feeling of insecurity. In

the study of social psychology, the feeling of insecurity in public spaces is equated with fear of crime or how individuals perceive insecurity due to the characteristics of a dangerous place (Carro et al., 2008). So far, in the urban context, statistic data owned by the police have paid more attention only to the number of reported crimes, so the aspect of fear of crime in urban areas has been ignored, underexplored, and undocumented (Cozens, 2008).

Until now, several studies have been conducted, linking public spaces with crime and the perception of insecurity. However, studies on insecurity due to crime in public spaces have been primarily seen in the design aspect at the neighborhood unit scale (Ceccato, 2020). The perception of insecurity in public spaces at a spatial scale is still little explored, although according to Ceccato (2020), issues will occur if policy and planning decisions ignore the perception of insecurity at an urban scale. In the context of urban planning and urban design, the city hierarchy consists of several scales, including microscale (the characteristic of buildings and the surrounding lot coverage), mesoscale (neighborhood scale), and macroscale (city overall scale and its integration with other cities) (Sharifi, 2019). According to Kamalipour et al. (2014), fear of crime is closely related to the urban dimension and should be mapped analytically to spatial structures and patterns, functional attributes, and the urban morphology.

This article aims to understand the position of urban spatial configuration variables on crime and the feeling of insecurity in public spaces in urban planning and urban landscape contexts based on international literature evidence. The findings of this study become a research gap for further studies. More researchers should evaluate the feelings of insecurity from crime in public spaces on a macroscale (urban spatial configuration variables).

To achieve this goal, literature search is carried out within the year range of 1974–2021 using the reference databases of Mendeley, ResearchGate, Google Scholar, ScienceDirect, and JSTOR. This article uses a systematic review analysis by visualizing published international studies. Excel software is also used to conduct a systematic review by coding and mapping a wide range of materials, including published studies of more than 5 decades to answer the following questions:

- What are the research gaps in studies about crime and the feeling of insecurity in public spaces within the built environment in the context of urban planning and urban landscape? Specifically, what variables are less researched on this topic, thus providing other researchers an opportunity to fill the gaps?
- How does the novelty of the framework contribute to the positioning of the urban spatial configuration dimension connected with the insecurity from crime in public spaces as a less-studied topic?

2 Urban planning phenomena related to the insecurity of crime

Early works on crime and insecurity in urban areas were heavily influenced by the discipline of sociology. Sociologists only concentrated on social problems as the cause of criminality by ignoring the built environment variables. This focus continued

until the early 1960s. However, during this period, several researchers began to pay more attention to the relationship between the built environment and crime (Adel et al., 2016). A notable study of the built environment on crime and individual security perceptions was carried out by Jacobs (1961), who stated that an active street life or street corridor filled with various activities could reduce criminal acts and increase the perception of security. Jacobs (1961) underlined the role of “eyes on the street,” emphasizing that the public acts more as guards in public spaces than the police do.

Jacobs’ idea was inspired by the built environment typology in the United States of America in 1961. In that year, the design typology of the built environment in United States cities consisted of apartments and high-rise buildings separated by unsupervised public spaces and office areas becoming deserted after dinnertime, causing a void of informal supervision and the lack of sense of community among the residents. Jacobs noticed a different feeling in the Greenwich area in New York City, as this area has different characteristics from the other neighborhoods in the heart of the United States. When the community utilizes the street corridor appropriately for various kinds of lively activities, they most likely build a high security wall from crime. Jacobs found that natural control from the district is essential to foster a sense of security and could be achieved by increasing the number of people gathered in an area through strategies that promote the diversity of land use areas and create opportunities for positive social interactions (Jacobs, 1961).

In 1973, Newman published a book about “defensible space, crime prevention through urban design,” and nowadays, it is recognized as CPTED (crime prevention through environmental design). Newman’s ideas on a defensible space adapted the criminology theory by Jeffery (1971). In his idea, Newman integrated design concepts and visual control in neighborhood areas. An area will be safer when people have a sense of belonging and responsibility for being part of their community because they will keep an eye on each other (Newman, 1973).

Newman (1973) and Poyner (1983) extended the surveillance idea from Jacobs (1961) by examining the design of residential areas against criminal activity. They revealed that architectural design (building heights, windows, and stairs) and urban design features (roads and open spaces) could increase community cohesiveness and defensible spaces or protect places from criminal acts. The essence of a defensible space is to restructure the neighborhood’s physical layout so that the residents can control the area around their homes. The defensible space includes streets, expansive courtyards, lobbies, and corridors (Newman, 1996).

The CPTED concept by Newman (1996) has similarities with the “Eyes on the Street” by Jacobs (1961). Both concepts focus on supervision, including placing windows facing the road, maximizing lighting, cutting bushes to improve visibility on the road, and using a single entry access. In the modern era, technology supports the surveillance concept, for example, the use of CCTVs. CPTED consists of four strategies: access control, supervision, maintenance, and territory. The crime-prevention concept in public spaces to reduce crime and insecurity by Newman (1973) is understood more as an environmental design strategy than an evaluation from a broader scale or an urban scale.

Many well-known researchers in this scope have developed environmental design and insecurity studies, adopting the

surveillance theory by Jacobs (1961) and Newman (1973). A surveillance theory has been developed by Skogan (1992), Ceccato (2013), Ceccato (2019), Ceccato (2020), Pain et al. (2006), Clarke et al. (1996), Loukaitou-Sideris et al. (2009), La Vigne (1996), Valentine (1990), Ceccato and Bamzar (2016), and Uittenbogaard (2015), in which they claimed that the lack of supervision and awareness in neighborhood areas leads to the emergence of social disorders in the environment, which eventually creates a possibility for someone to become a victim of crime.

However, the surveillance theory by Jacobs (1961), Newman (1973), Skogan (1992), Ceccato (2013), Ceccato (2019), Ceccato (2020), Pain et al. (2006), Clarke et al. (1996), Loukaitou-Sideris et al. (2009), La Vigne (1996), Valentine (1990), Ceccato and Bamzar (2016), and Uittenbogaard (2015) is challenged by the findings of Ramsay (1982), Soomeren (1996), Gentry (2015), Belanger (1999), Burrows (1980), Shellow et al. (1975), Loukaitou-Sideris et al. (2002), Bhattacharyya (2016), Sypion-Dutkowska and Leitner (2017), Dhillon and Bakaya (2014), Newton et al. (2015), Solymosi et al. (2015), Boessen and Hipp (2018), Newton (2004), Yu and Smith (2015), Crenshaw and John (1989), Talen (1996), and Roy and Bailey (2021), which revealed that the surveillance theory and environmental design including the layout of building plots, lightings, and police stations cannot establish a sense of community through strategies to unite people because the more the people on the streets, the more the opportunities for people to commit crimes. More trash, social chaos, social disorder, and social imbalance in the community also cause crime to occur.

The critique proposed also underlines that there is no direct relationship between the built environment design and behavior (feeling safe and avoiding being crime victims). According to Gans (1982) and Hunter (1975), non-physical variables affect the reduction of crime and increase the sense of security. These variables include their lifestyle, length of stay, sense of belonging, and social class. This claim is the anti-thesis of the design aspect in the built environment.

3 Data and methods

The literature search covered all publications within 50 years from 1970 to 2021 on Mendeley, ResearchGate, Google Scholar, ScienceDirect, and JSTOR. The 50-year interval chosen refers to the interval studies conducted by Ceccato (2020), conducting a systematic review on the urban design and fear of crime at 50-year intervals. However, we emphasize that the method used in this study differs from that in Ceccato (2020). We refer to Mota et al. (2021), reading the published studies manually without software, such as VOSviewer.

To conclude the studies with the theme of public spaces, feelings of insecurity, and crime, a manual systematic literature review is carried out using excel software. The manual systematic literature review utilized in this study is inspired by Mota et al. (2021) and how they sorted, categorized, synthesized, and concluded studies on the research database. Several steps are taken in the manual systematic literature review, including the following:

- Inserting the distribution of studies during 1970–2021 related to crime and the feeling of insecurity in public spaces, which

TABLE 1 Number of analyzed articles based on the sources.

No.	Articles source	Total
1	Google Scholar	18
2	Research Gate	23
3	Science Direct	12
4	Mendeley	12
5	JSTOR	7

Note: Number of Literature evaluated at an interval of 50 years was carried out by Putra, Salim, Indradjati, and Prilandita (2023).

are evaluated based on the urban planning and urban design context.

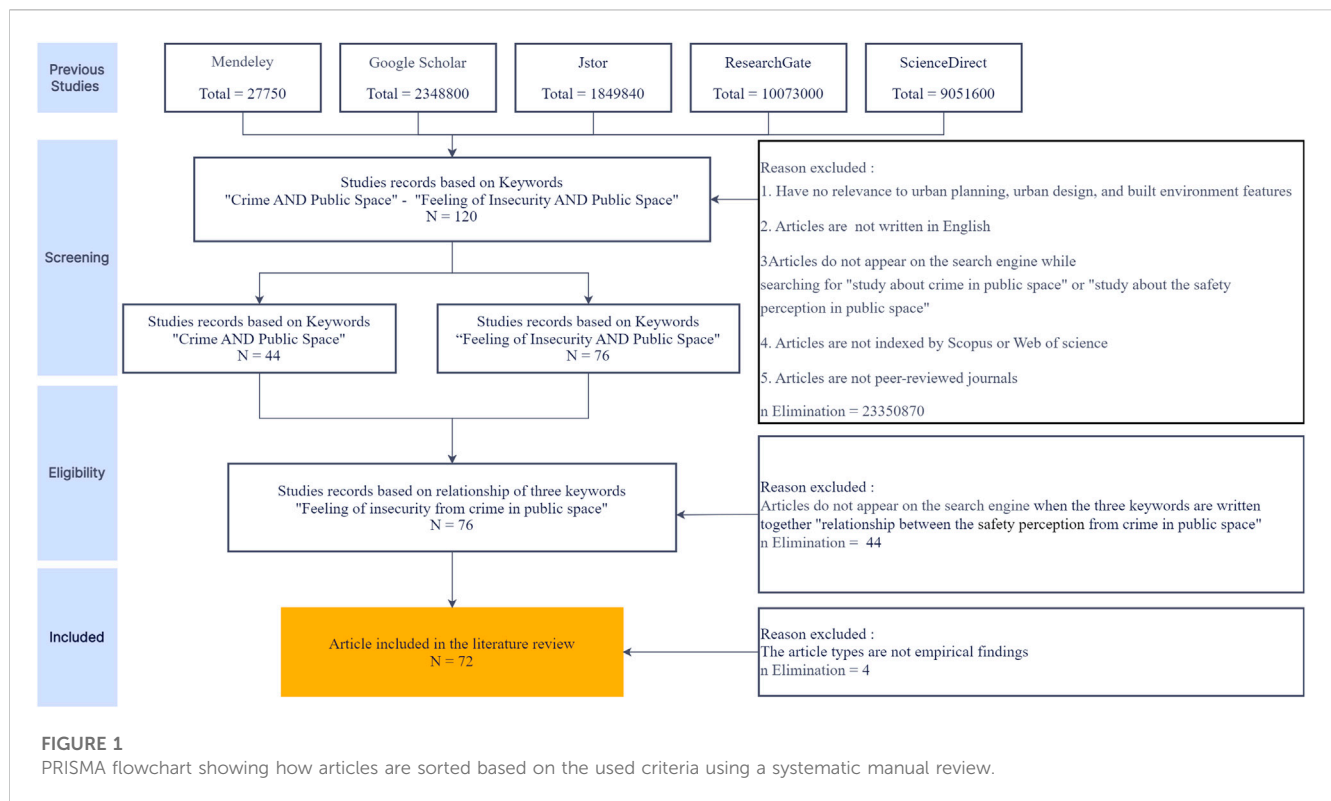
- Classifying studies based on their focus and variables, which, among others, are CPTED, management of space, nodes (access and crossroads), land use, socio-demographic, economy, facade and building model, social kinship, social disorder, social support, density and activity, psychology and image, and government policy, into an excel spreadsheet to discover what topics the studies have mostly been conducted on and which ones are still understudied.

This study utilizes a systematic manual review using an excel spreadsheet as it requires an in-depth reading with some criteria to evaluate previous studies. The evaluations consist of the research focus and substance following its relevance to the urban planning and urban design context. An automatic systematic review using software such as VOSviewer is considered unlikely to synthesize journals by reading and sorting the required previous studies in detail. The criteria for the articles being evaluated are as follows:

- Articles focusing on the context of urban planning, urban design, and built environment features
- Articles in English
- Articles containing empirical findings and case studies
- Articles focusing on the review or literature review are excluded
- Articles must be peer-reviewed journals or IOP conference series as the justification of the quality of articles included in the analysis
- Articles must be indexed by Scopus and Web of Science as the justification of the quality of articles included in the analysis

By writing down “crime,” “the feeling of insecurity,” and “public space” separately on Mendeley, ResearchGate, Google Scholar, and JSTOR databases, millions of articles are obtained. We can see the number of findings in the “Result Section” on Mendeley, ResearchGate, Google Scholar, and the JSTOR website. However, after the keywords are narrowed down manually by typing “study about crime in public space” or “study about the feeling of insecurity in public space” in the process for conducting a systematic review in this study about how articles were found, eliminated, and sorted is described in the Prisma Flowchart (Figure 1).

After the reduction following the selection criteria, as shown on the Prisma Flowchart, 72 articles were obtained. Afterwards, the articles were analysed based on scale and object.



These two criteria are used to analyze published studies and to draw conclusions regarding variables that are less researched on this topic. The reading of studies on this topic is presented using a diagram (Table 1).

4 Studies on crime in public spaces in the context of urban planning and urban design

Smith and Clarke (2000); La Vigne (1996); Chaiken et al. (1974); Loukaitou-Sideris et al. (2002); La Vigne (1996); Lynch & Atkins (1988); Ceccato et al. (2015); and La Vigne (2015) found that crime in urban public spaces including subways occurs due to a lack of supervision and absence of guards, elements, which are included in the design features of CPTED. Kim et al. (2019); Satiawan et al. (2019); and Loukaitou-Sideris et al. (2001) found that the vulnerability to criminality in urban spaces is influenced by CPTED variables, including surveillance, street junction, lighting, visibility, and vegetation.

McCormick & Holland (2015) concluded that the implementation of CPTED can reduce crime. Yokohari et al. (2006); Chaiken et al. (1974); and Bhattacharyya (2016) concluded that criminal acts could be prevented as a result of good public space management by implementing maintenance strategies. Meanwhile, poor public space management, which may result in trash everywhere and graffiti, is a crime generator.

Studies have found a relationship between CPTED and crime in urban public spaces. CPTED has a significant effect on crime, and few studies have found an insignificant effect of CPTED on urban public spaces. Crime in urban public spaces occurs due to a lack of

supervision and absence of guards, elements which are included in the design features of CPTED. CPTED can reduce crime.

Wuschke (2016) concluded that crime incidences are not uniformly distributed in all urban spaces. The typical locations that serve as hotspots are activity nodes and movement routes. Cohen and Felson (1979); Brantingham and Brantingham (1993); Yu (2009); Hart and Miethe (2015); and Song et al. (2019) found that crime occurs when human movement intersects in a space as part of the three elements of a city, namely, paths, nodes, and edges. A node is a centralized place of activity, namely, a public hall. Paths are encounters occurring due to movement and accessibility, namely, intersections or urban transit systems. An edge is an area that becomes the boundary of a settlement, place of work or recreation or other interactions. Loukaitou-Sideris et al. (2001) discovered that buildings with free accessibility and lack of supervision lead to crime.

Studies have found that circulation patterns and the accessibility of land use affect crime in public spaces. The typical locations that serve as hotspots are activity nodes and movement routes because of the abundance of potential targets for a crime to be committed. Activity nodes and activities affect crime in public spaces because there are potential victims at such locations. Crime occur when human movement intersects in a space as part of the three elements of a city, namely, paths, nodes, and edges because of the abundance of potential targets for a crime to be committed.

Kinney et al. (2008) and Dwidinita et al. (2018) claimed that commercial land use is related to the proportion of crimes, such as assault and motor vehicle theft. Gentry. (2015); Belanger (1999); Shellow et al. (1975); Burrows (1980); Loukaitou-Sideris et al. (2002); Newton et al. (2015); and Solymosi et al. (2015) stated that theft is more likely to occur in public spaces, such as transit

stations with a high number of passengers on weekdays, and such transit stations have corridors connecting buses and parking lots as potential spaces for a crime to be committed. Loukaitou-sideris (1999); Dwidinita et al. (2018); and Loukaitou-Sideris et al. (2009) found that the abundance of “negative” environmental attributes and the lack of a “defensible space” constitute crime generators. These negative attributes include liquor stores, bars, check cashing stations, hot sheet motels, single room occupancy (SRO) hotels, adult bookstores or cinemas, parking lots, empty storefronts or plots, and abandoned buildings. In addition, areas with poor supervision and lighting are also categorized as negative spaces.

Sypion-Dutkowska and Leitner (2017) and Adams et al. (2015) found that crime usually occurs in several land use areas within the built environment, including alcohol shops, clubs and discotheques, cultural facilities, national housing, and commercial buildings. In contrast, halls, cemeteries, green areas, transportation hubs, and residential parks are considered low-crime areas. Nazmfar et al. (2020) stated that the crime rate is high and security is low when a location is further away from the population center and relatively quiet.

Loukaitou-Sideris et al. (2001); Loukaitou-Sideris et al. (2009); and Bhattacharyya (2016) found that the configuration of a neighborhood in urban areas has an impact on crime. Crime rates also increase in neighborhoods with undesirable places, such as liquor stores, check cashing stations, empty buildings, and places with graffiti and trash. Stucky and Ottensmann (2009) and Browning et al. (2010) found that land use directly affects crime rates and socioeconomic losses. Adams et al. (2015) and Hart and Miethe (2015) discovered that mixed-use areas that accommodate various activities can increase the risk of crime because of their potential as a crime generator.

Ceccato (2019) and Webb and Laycock (1992) found that surveillance with technology plays an essential role in reducing crime. The use of technology as environmental surveillance is a substitute for traditional surveillance in the form of eyes on the street in public spaces. Long et al. (2021) discovered that natural surveillance in the form of crowds in public spaces and the use of technology—CCTVs—play an essential role in preventing crime on the streets. However, Koskela (2000) found that surveillance and CCTV control in public spaces have little impact on preventing crimes of sexual harassment against women.

Studies have found that land use affects crime in public spaces. Crime rates also increase in neighborhoods with undesirable places, such as liquor stores, check cashing stations, empty buildings, and places with graffiti and trash. The density and activity affect crime in public spaces; crimes are more likely to occur in public spaces with a high number of people because there are lots of potential targets for a crime to be committed. The crime rate is high and security is low when a location is further away from the population center and is relatively quiet. Social disorder affects crime in public spaces because social disorders such as delinquents, drunks, and drug users are often affiliated with criminal networks. The economy affects crime in public spaces because areas categorized as poor areas have more perpetrators than rich areas. Space management affects crime in public spaces. Poor public space management, which may result in trash everywhere and graffiti, is a crime generator. Poor public space management represents a place with social disorganization.

Struyf (2020) revealed that street lighting could reduce crime. Mihinjac and Saville (2020) concluded that the SafeGrowth method and second-generation CPTED, emphasizing collaboration and building collectivity, can reduce crime. Escobar (2012) stated that social kinship within the environment reduces crime due to space control from social disorganization, such as gangs, urban militias, and disorganized groups.

Studies have found that there is a relationship between social kinship in public spaces and crime. Social kinship affects crime in public spaces. Social kinship within the environment reduces crime due to the space control from social disorganization.

Monqid (2012) revealed that crime and violence against women in public spaces occur because of gender segregation. Violence against women defines that public spaces belongs to men, resulting in the restriction placed on women in public spaces. Dhillon and Bakaya (2014) and Bhattacharyya (2016) revealed that harassment against women often occurs on busy streets during the day. The high rate of harassment is associated with factors such as usual attitudes toward women and the weak implementation of the law.

Studies have found that socio-demographics affect crime in public spaces. Crime and violence against women and elder people in public spaces occur because of gender segregation and age.

The studies on crime in public spaces show that, so far, most studies analyze CPTED and land-use objects and how the implementation of CPTED in the neighborhood area significantly affects crime in public spaces within the built environment of a city.

5 Studies on the perception of insecurity from crime in public spaces in the context of urban planning and design

Hung and Crompton (2006) concluded that the factors causing people to be reluctant to visit urban parks in Hong Kong are poor health and park management. Due to the poor management of the park, there is inappropriate behavior causing fear of crime. Jorgensen et al. (2013); Brown et al. (2007); Boessen and Hipp (2018); and Robinson et al. (2003) found that social disorders present in public spaces in a crowded environment, including frightening individual appearance, fights that occur on streets, rascal groups on the streets, quiet areas, unsupervised dogs, trash, graffiti, vacant land, limited visual surveillance, and the potential for hiding places, lead to the emergence of personal feelings of insecurity in urban areas. Studies have found that space management affects the feeling of insecurity in public spaces. Due to the poor management of urban public spaces, there is inappropriate behavior causing fear of crime.

Yeoh and Yeow (1997), Tandogan and Ilhan (2016), and Trench et al. (1992) found that the “spatial expression of patriarchy,” i.e., the role of men is more significant than women’s, increases women’s fear of becoming victims of crime in a public space, resulting in them preferring to stay close together, moving in safe places, and avoiding public spaces, such as roads in the city, park, plaza, public transportation, and its surrounding area, especially while carrying out activities in the afternoon to the evening. Pain (1991) found that there is segregation of women from men, where men dominate

public spaces more than women. The amount of violence against women in the private space psychologically impacts women by perceiving it in public spaces. As a result, women are more likely to avoid public spaces because of the fear of crime from the formed image.

Erkan and Topcu (2021) found that gender is a factor that influences the fear of crime in the public sphere in Muslim and Asian countries. Women have a higher level of fear of crime than men in Muslim and Asian countries. Valentine (1996); Morrell (1996); Valera-Pertegas and Guàrdia-Olmos (2017); Yates and Ceccato (2020); Koskela and Pain (2000); and Whitley and Prince (2005) discovered that women, people with disabilities, and some lesbians, as minority groups, feel insecure in public spaces. Fear is influenced by several places that give an impression to individuals with disabilities, so the perception of places often arises. Ross (2000) found that women who carry out activities on the streets (public spaces) in poor areas have a perception of feeling insecure and high levels of fear of crime. In addition, women with white skin color feel safer than other ethnicities in public spaces.

Rezvani and Sadra (2019); Shibata et al. (2015); Valera-Pertegas and Guàrdia-Olmos (2017); and Ceccato (2016) found that the fear of crime in public spaces is caused by the mentality, socio-demographic, and image of a place captured by individuals. These factors are important issues that reduce access to public places and limit interactions with public places. Studies have found that socio-demographics affect the feeling of insecurity in public spaces. In public spaces, there is the “spatial expression of patriarchy,” i.e., the role of men is more significant than women’s, which increases women’s fear of becoming victims of a crime in public spaces. There is a relationship between a public space image and the feeling of insecurity and it is usually generated by the elderly and women. The image of a public space affects the feeling of insecurity in a public space. Human psychology related to an image affects the feeling of insecurity in public spaces. Women, people with disabilities, and some lesbians, as minority groups, feel insecure in public spaces. Fear is influenced by several places that give an impression to individuals with disabilities, which often generates a perception of such places.

García-Cervantes (2021) found that social dimensions of kinship, community, and individual relationships influence insecurity and violence in urban spaces. Valente and Vacchiano (2020) discovered that the fear of crime is differentiated by the location. In Argentina, the fear of crime is positively related to socioeconomic vulnerability, whereas in Brazil, it is caused by the consequences of previous victimization and mistrust of others. Chirisa et al. (2016) and Peluso (2013) found that the feeling of insecurity in urban areas results from increased crime and violence triggered by several socioeconomic challenges, politics, and local government policies. Local governments are authorities in charge of implementing and designing public policy strategies. Politicians, managers, and experts must compare everyday actions with the complexity of the four main concepts: security, insecurity, fear, and degradation.

Roy and Bailey (2021) found that the lack of security of women, the existence of the ‘male gaze,’ the negative male personality in public spaces, the presence of middle-aged men and strangers, and places where harassment is reported repeatedly harm women’s perceptions of safety. Conversely, social control increases women’s perceptions of safety in public spaces. The existence of

social control is caused by activities in public spaces and busy streets due to daily human commuting, hawkers, and shop owners involved in activities, which are considered safe areas.

Brunton-Smith and Sturgis (2011) found that the characteristics of the built environment, visual signs of disorder (vandalism, abandoned or vacant buildings, unsupervised youth, graffiti, and trash), and recorded crimes all have direct and independent effects on the individual-level fear of crime. In addition, individual differences in the fear of crime are severely constrained by the socioeconomic characteristics of the neighborhood where people live, and poor areas are often associated with social disorders.

Studies have found that social support and kinship affect the feeling of insecurity in public spaces because social dimensions of kinship, community, and individual relationships influence insecurity in urban spaces. The economy also affects the feeling of insecurity because poor areas are often associated with social disorders and affect the feeling of insecurity.

Mazlaghani (2014); Clarke et al. (1996); La Vigne (1996); Valentine (1990); Bogacka (2011); Uittenbogaard (2014); Loukaitou-Sideris (2015); Svendsdotter and Guaralda (2018); Viswanath and Mehrotra (2007); Stjernborg and Bamzar (2020); Pain and Townshend (2002); Azari et al. (2015); Carro et al. (2008); Valera and Guàrdia (2014); Ceccato (2013); Mahadevia and Lathia (2019); Ceccato et al. (2013); Ceccato (2016); Kostenwein (2021); Koskela (2002); Yavuz and Welch (2010); and Shibata (2021) found that several CPTED variables including surveillance, CCTV, lighting, and absence of graffiti in a neighborhood area affect the perception of security in public spaces, including transit-oriented development areas (subway stations and bus stops).

Bennetts et al. (2017) highlighted the importance of several CPTED principles, including activity, maintenance, and line of sight and revealing the importance of familiarity and personal security strategies. Carro et al. (2008) and Wrigley-Asante et al. (2019) concluded that CPTED variables, including surveillance, lighting, and the absence of graffiti, affect individuals’ feelings of security in public spaces. Kostenwein (2021) found that, apart from CPTED, other variables of environmental design, such as gated communities, increase the residents’ feeling of security. Nevertheless, Tanulku (2016) stated that a gated community is not completely safe, as it creates new forms of danger and unsafe situations. The sense of security in a gated community is formed by the developer’s design and the resident community. Lim et al. (2020) concluded that the biggest factor influencing security and reducing crime in public spaces is CPTED, rather than CPSD (crime-prevention methods through social development).

Machielse (2015); Viswanath and Mehrotra (2007); Valentine (1989); Börjesson (2012); and Yavuz & Welch (2010) found that women are more likely to feel insecure than men to do activities in public spaces due to the poor environmental design, such as poor lighting, narrow roads, too many bushes and trees that reduce visibility, and the presence of delinquents and sloppy people. Maruthaveeran and van den Bosh (2015) and Lindgren and Nilsen (2012) found that the design attributes or facilities in parks affect the fear of crime in public parks.

Wallace et al. (1999) found that CCTVs do not have a significant impact on the feeling of security in public spaces, such as in the transportation hub. Ceccato and Bamzar (2016) stated that the safest environment for older people is high surveilled neighborhoods and

the least safe environment is quiet places. [Shahdadi \(2016\)](#) stated that security is an external and objective idea, while the feeling of security is an inner and mental idea. Generally, there are two aspects of security: an objective aspect evaluated by environmental factors (CPTED) and objective behavior and a subjective aspect based on a group's sense of security (image). In urban science, the concept of security includes both urban security and environmental security.

Studies have found that CPTED has a significant effect on the feeling of insecurity in public spaces. Several CPTED variables, including surveillance, CCTVs, lighting, and the absence of graffiti in a neighborhood area, affect the perception of security in public spaces, including transit-oriented development areas (subway stations and bus stops).

[Newton \(2004\)](#) and [Mahadevia and Lathia \(2019\)](#) found that not only the density in public spaces, such as bus stops, affect the feeling of insecurity but also the specific time at which the peak accumulation of passengers occurs. Potential criminals usually have observed certain hours with the highest activity intensity in public spaces. [Loukaitou-Sideris et al. \(2009\)](#) showed that deserted bus stops and train carriages, parking lots, dimly lit areas, and crowded public transport provide a stressful environment for many women. They often have to change their modes of transportation and travel patterns to avoid it.

[Hong and Chen \(2014\)](#) found that an environment with good pedestrian accessibility and facilities makes people feel safer and free from crime. Density is considered a barrier to activities in public spaces. However, some pieces of literature reveal the opposite fact that the residents in safe and dense areas are more likely to walk, and it is likely due to surveillance. [Uittenbogaard \(2015\)](#) found that environmental attributes around stations that indicate crowds, such as busy squares, cycling and walking trails, residential neighborhoods, and taxi stands, do not provide significant control over public spaces from the entrances to the underground lanes. Only cycling and passenger lanes to the station positively contribute to surveillance.

Studies have found that the density and activities in public spaces affect the feeling of insecurity. Social disorders present in public spaces in quiet areas, including frightening individual appearance, fights that occur on streets, rascal groups on the streets, unsupervised dogs, trash, graffiti, vacant land, limited visual surveillance, and the potential for hiding places, lead to the emergence of personal feelings of insecurity. However, insecurity increases in urban areas with a high concentration of people and buildings because there are many targets as potential victims.

[Wiebe et al. \(2015\)](#) found that most teenagers feel less safe in public spaces, especially when they travel using public transportation. Their fear increases after dark as the security is considered lower and commonly associated with social disorders, such as the presence of drunken people and other forms of negative activities. [Pain et al. \(2006\)](#) and [Painter \(1996\)](#) showed that street lighting helps increase security and reduce crime.

Studies have found that social disorders affect the feeling of insecurity in public spaces. The characteristics of the built environment, visual signs of disorder (vandalism, abandoned or vacant buildings, unsupervised youth, graffiti, and trash), and recorded crimes all have direct and independent effects on the individual-level fear of crime.

[Yu and Smith \(2015\)](#); [Breetzke and Pearson \(2014\)](#) concluded that the lanes to public spaces in certain land uses have a low level of security as there are many bad occurrences in these land use areas. Certain land use areas, e.g., poor and congested Hispanic neighborhoods with more foreign-born people, have higher crime rates than wealthier and more educated neighborhoods. [Smit et al. \(2015\)](#) found that closed neighborhoods impact residents' pattern of daily activities, willingness to access public spaces, and personal security. [Viswanath and Mehrotra \(2007\)](#) and [Breetzke and Pearson \(2014\)](#) found that certain land use areas with liquor stores, empty and unmaintained bus stops, and the existence of bad social factors (such as youth gathering and whistling) increase the feeling of insecurity. [Adams et al. \(2015\)](#) and [Hart and Miethe \(2015\)](#) concluded that mixed land use can increase insecurity because the activities are directed in an area. Studies have found that land use affects the feeling of insecurity in public spaces. The feeling of insecurity increases in neighborhoods with undesirable places, such as liquor stores, check cashing stations, empty buildings, and places with graffiti and trash. The safest environment for older people and minority groups is highly-surveilled neighborhoods, while the least safe environment is quiet places. Certain urban land uses can be categorized as unsafe areas. A mixed land-use area is considered to increase the feeling of insecurity in public spaces.

[Al-bayati \(2016\)](#) concluded that urban forms affect the perception of the feeling of insecurity of the city population caused by terrorism. There is a relationship between urban forms and the feeling of insecurity. Appropriate urban forms can increase individual security for the individuals living inside.

Studies on public spaces and the feeling of insecurity tend to analyze CPTED variables and elaborate their significant effect on creating residents' feelings of security in public spaces in the neighborhood areas. Studies about this topic have also evaluated more about the socio-demographics and how socio-demographic characters (gender, age, income, culture, etc.) significantly affect the emergence of feelings of insecurity in public spaces. Marginalized communities (e.g., black, LGBT, and Hispanic) with their socio-demographic characteristics feel insecure in a crowded public space because of their perceived psychological state and image.

6 Discussion

From the previous studies, it is known that there are two views on the surveillance theory. The first view argues that many activities in public spaces will reduce the feeling of insecurity because of the supervision or eyes on the street. On the other hand, the second view claims that activities in public spaces will create feelings of insecurity as individuals have the potential to become targets of crime.

The first view that supports the theory of Jacobs and Newman is better understood as a design approach in the built environment to increase security. The strategies include setting the building facade and lighting, placing security posts and CCTVs, and setting gates, walls, and circulation near the entry access into the neighborhood area. The surveillance from the setting neighborhood helps maximize visual control in public spaces. Contrary to the surveillance theory, the second view is more directed at the social setting in the built environment. The socio-demographic setting of an area has more influence on the feeling of insecurity and crime than the physical

TABLE 2 Studies during 1970–2021 related to the object and scale.

Object	Scales				
	Micro	→	Meso	→	Macro
Urban form CPTED		Bennetts et al. (2017); Bogacka (2021); Bogacka (2011); Börjesson (2012); Carro et al. (2008); Ceccato (2013); Ceccato et al. (2013); Ceccato and Bamzar (2016); Clarke et al. (1996); Cozens et al. (2003); Koskela (2002); Kostenwein (2021); La Vigne (1996); Lim et al. (2020); Lindgren & Nilsen (2012); Loukaitou-Sideris (2015); Loukaitou-Sideris et al. (2009); Lynch and Atkins (1988); Machielse (2015); Mahadevia and Lathia (2019); Maruthaveeran and van den Bosh (2015); Mazlaghani (2014); Painter (1996); Pain and Townshend (2002); Pain et al. (2006); Shahdadi (2016); Shibata (2021); Smit et al. (2015); Stjernborg & Bamzar (2020); Svendsdotter & Guaralda (2018); Tanulku (2016); Uittenbogaard (2014); Valentine (1989); Valentine (1990); Valera and Guàrdia (2014); Viswanath & Mehrotra (2007); Wallace et al. (1999); Wiebe et al. (2015); Wrigley-Asante et al. (2019); Yavuz and Welch (2010); Yu and Smith (2015)	Azari et al. (2015)		Al-bayati (2016)
Social disorder	Brown et al. (2007); Brunton-Smith and Sturgis (2011); Hung and Crompton (2006); Jorgensen et al. (2013)	Boessen and Hipp (2018); Machielse (2015); Painter (1996); Pain and Townshend (2002); Viswanath and Mehrotra (2007); Wiebe et al. (2015)			
Socio-demographics	Erkan & Topcu (2021); Hung and Crompton (2006); Jorgensen et al. (2013); Morrell (1996); Painter. (1996); Rezvani & Sadra (2019); Ross (2000); Shibata et al. (2015); Tandogan & Ilhan (2016); Trench et al (1992); Valentine (1996); Valera and Guàrdia (2014); Whitley and Prince (2005); Yeoh and Yeow (1997)	Börjesson (2012); Ceccato et al. (2013); Ceccato and Bamzar (2016); Loukaitou-Sideris et al. (2009); Lynch and Atkins (1988); Machielse (2015); Mahadevia and Lathia (2019); Pain and Townshend (2002); Roy and Bailey (2021); Stjernborg and Bamzar (2020); Uittenbogaard (2014); Viswanath and Mehrotra (2007); Hong and Chen (2014)		Breetzke and Pearson (2014)	
Circulation patterns and movement nodes		Mahadevia and Lathia (2019); Valera-Perteras and Guàrdia-Olmos (2017); Yates and Ceccato (2020)			
Social support and kinship	García-Cervantes (2021); Valente and Vacchiano (2020)	Kostenwein (2021); Stjernborg and Bamzar (2020); Tanulku (2016); Wrigley-Asante et al. (2019); Yates and Ceccato (2020); Yavuz and Welch (2010)			
Image and psychology	de Rafael and Fernández-Prados (2019); Koskela and Pain (2000); Rezvani and Sadra (2019); Shibata et al. (2015); Valente and Vacchiano (2020); Yeoh and Yeow (1997)	Koskela (2002); Roy and Bailey (2021)			
Land use		Breetzke and Pearson (2014); Ceccato (2013); Ceccato et al. (2013); Ceccato and Bamzar (2016); La Vigne (1996); Smit et al. (2015); Uittenbogaard (2015); Viswanath and Mehrotra (2007); Yu and Smith (2015)		Breetzke and Pearson (2014)	Shach-Pinsly (2019)
Space management	Brown et al. (2007); Carro et al. (2008); Hung and Crompton (2006); Jorgensen et al. (2013)	Carro et al. (2008); La Vigne (1996); Loukaitou-Sideris (2015); Maruthaveeran and van den Bosh (2015); Shahdadi (2016)			
Economy	Brunton-Smith and Sturgis (2011); Valente and Vacchiano (2020); Whitley and Prince (2005)	Chirisa et al. (2016)			
Activity density		Boessen and Hipp (2018); Clarke et al. (1996); Robinson et al. (2003); Roy and Bailey (2021); Uittenbogaard (2015); Valentine (1990); Hong and Chen (2014)			Saraiva and Ana (2021); Shach-Pinsly (2019)

Note: Literature evaluation at an interval of 50 years was carried out by Putra, Salim, Indrajati, and Prilandita (2023).

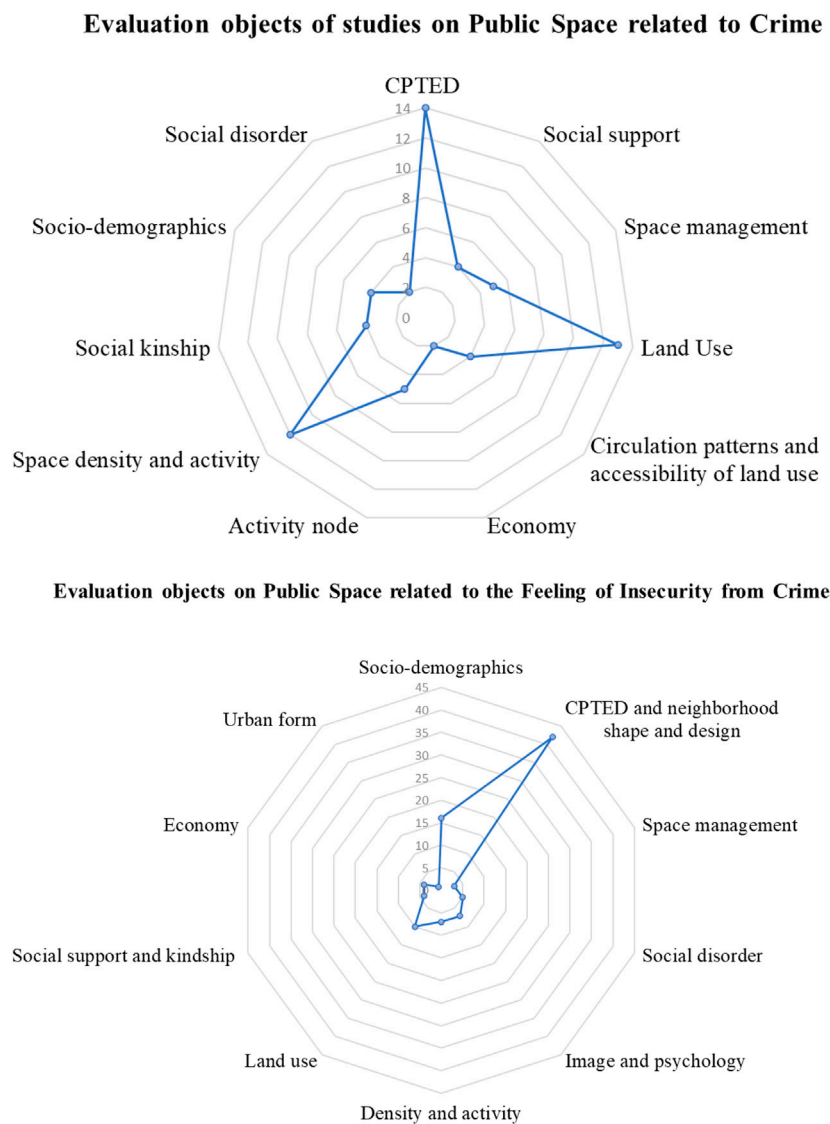


FIGURE 2 Various substance scales in studies on the feeling of insecurity from crime in public spaces during 1970–2021.

setting. Poor and slum areas, less gender equality lifestyles and cultures, low perception of minorities, such as LGBT, lack of kinship in an environment, and the culture of social class division are positively correlated with the feeling of insecurity from crime.

Previous studies have also shown differences in individuals’ feelings of insecurity. In Asian, African, and Middle Eastern countries, the feeling of insecurity is affected by socio-demographics, such as the female status which is under the male’s status [Yeoh and Yeow (1997); Viswanath and Mehrotra (2007); Yavuz and Welch (2010); Tandogan and Ilhan (2016); Rezvani and Sadra (2019); Roy and Bailey (2021)]. Meanwhile, in America and Europe, the fear in public spaces is caused by design features, such as surveillance and visibility [Lindgren and Nilsen (2012); Valentine (1989); Mahadevia and Lathia (2019); Uittenbogaard (2014); Loukaitou-Sideris et al. (2009)]. This may happen because of the principle of role equality in Western countries. The findings of this

study state that every city with different characteristics of urban forms and cultures will have a different human psychological response (perceived insecurities) toward urban features.

Studies during 1970–2021 focus more on the variables of environmental design features at the neighborhood scale (micro- and mesoscale) (Table 2 and Figure 2), such as CPTED, which consists of social control and land use (Figure 3). Meanwhile, variables at urban spatial configuration (macroscale) are still under-researched. Apart from focusing on the neighborhood, it is essential to evaluate the feeling of insecurity at a city scale (a city’s overall structure). As there are various typologies with their respective characteristics in each area, a comprehensive and non-partial analysis is needed.

The macroscale covers a city’s overall structure and its current and future position in relation to other cities and settlements within the wider city network. Some of the main elements and aspects of the macroscale are the city size, development type (i.e., compact,

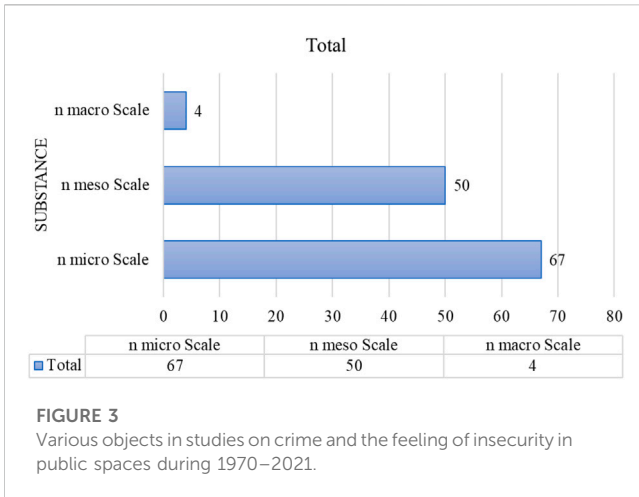


FIGURE 3
Various objects in studies on crime and the feeling of insecurity in public spaces during 1970–2021.

aspects of the microscale are the physical arrangement and structural features of buildings, which can be in the form of materials, roofs, walls, rooms, fenestration, façade, the extent of setback, lot coverage, emergency routes, parking requirements, and unit types of the building and housing (Sharifi (2019)).

The findings of the systematic review of this study are reinforced by the findings of a literature review from Ceccato (2020). According to Ceccato (2020), studies on the relationship between public spaces, crime, and the fear of crime during 1968–2018 are only reviewed in the neighborhood scale with a focus on the design aspects or CPTED variables, including reducing the permeability and maximizing control by creating barriers (gates, fences, and walls). CPTED and visibility variables are parts of the neighborhood shape and design in creating a safe environment.

7 Conclusion

organic, and unplanned), land use (distribution patterns of populations and jobs), degree of clustering, and landscape connectivity. The mesoscale relates to the structure and layout of neighborhoods, blocks, lots, open spaces, and roads. Some of the main elements and aspects of the macroscale are the neighborhood shape and design, neighborhood density, land-use mix, size and layout of lots and blocks, design and structure of streets, and size/shape and distribution pattern of open spaces. The microscale is related to the granular design and structure of buildings and their position in adjacent buildings, open spaces, pathways, and human interactions between buildings. Some of the main elements and

In the context of urban planning and urban landscape, the research gap on the feeling of insecurity from crime in public spaces within the built environment is on urban spatial configuration variables. There are still a few studies at this scale, whereas to study the relationship between urban public spaces and the feeling of insecurity, it is necessary to evaluate beyond the micro- and mesoscale or neighborhood units in the built environment.

It is essential to assess urban spatial configuration dimensions (microscale), rather than focusing solely on environmental design features (micro- and mesoscale). Design variables, such as CPTED, which focus on reducing the permeability and maximizing control

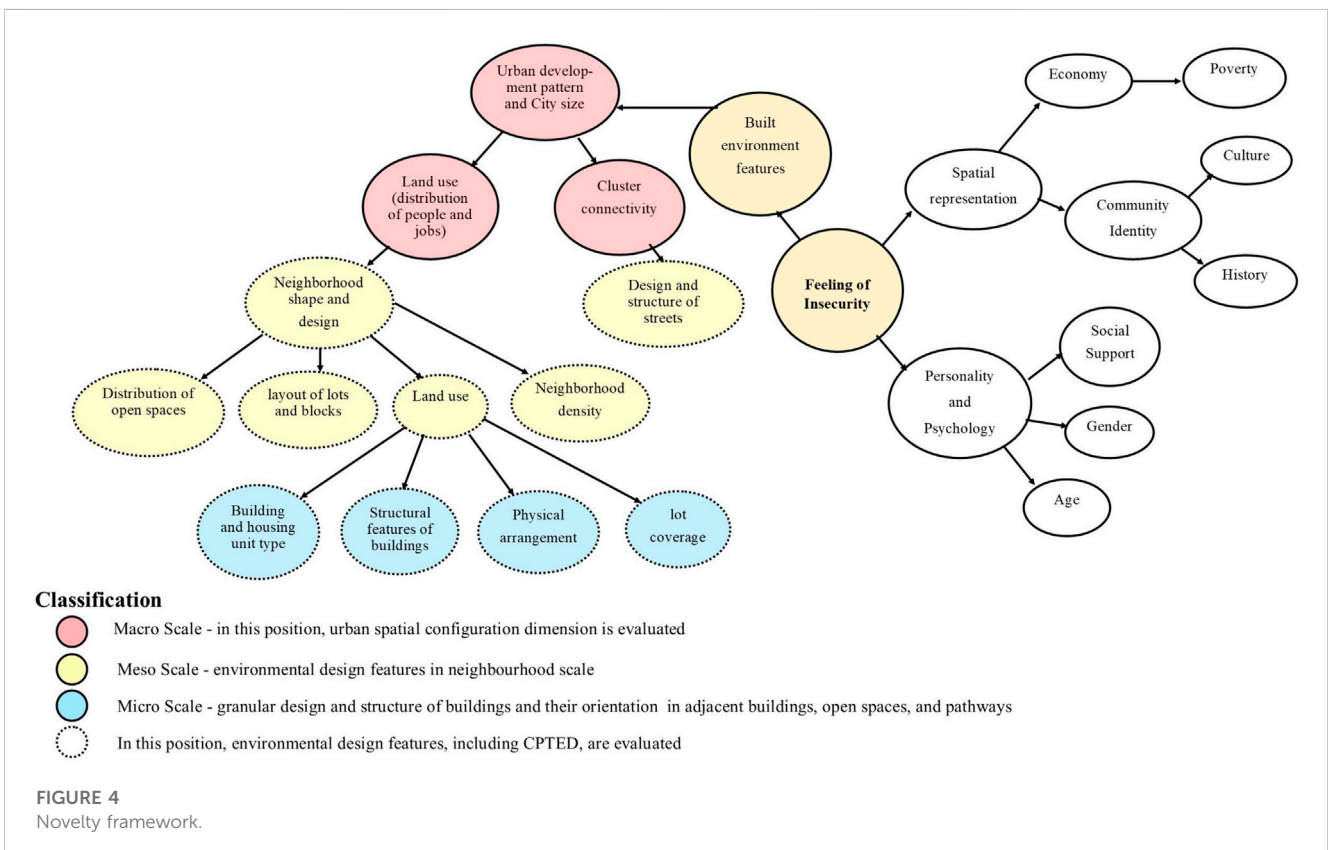


FIGURE 4
Novelty framework.

by creating barriers (such as gates, fences, and walls), have been extensively evaluated, and we have gained a great deal of insight from this approach. Few articles on studies evaluating urban morphological variables related to feelings of insecurity in public spaces (macroscale) have been found on search engines; some of them are articles by Al-bayati (2016) and Saraiva and Ana (2021). Al-bayati (2016) evaluates urban forms in relation to the feeling of insecurity with a focus on terrorism, which is not an urban crime, as explained by Soomeren (1996) and Silva & Li (2020).

The novelty framework of the study illustrates that more researchers should evaluate the feelings of insecurity from crime in public spaces on a macroscale, namely, the urban spatial configuration dimension. Variables of urban spatial configuration need to be implemented to assess the perception of insecurity (Figure 4). Future studies can evaluate variables of urban spatial configuration, including urban development patterns (planned unit development and unplanned development or organic urban development) and city sizes, distribution of people and jobs, and cluster connectivity. According to Kamalipour et al. (2014), most of the studies on the fear of crime, implicitly and explicitly, ignore the complex relationship between the fear of crime and the built environment, even though the fear of crime is closely related to the perception of urban crime on spatial structures and patterns, functional attributes, and urban morphology that need to be mapped analytically.

Al-bayati (2016) claimed that different urban spatial configurations affect individual responses to security. Williams et al. (2000) suspected that to understand the urban spatial configuration related to feelings of insecurity and criminality, a wide range of elements, including land use and the density of the surroundings, distribution of settlements, linkages with the surrounding environment, and accessibility between areas, must be observed in a comprehensive manner.

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Data availability statement

The original contributions presented in the study are included in the article/Supplementary Materials; further inquiries can be directed to the corresponding author.

Author contributions

DW is the corresponding writer. WS is the supervising lecturer, providing input and direction. PN is the second supervising lecturer, providing input and direction. NP is the third supervising lecturer, providing input and direction.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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