5 Safety of urban park users

The case of Poznań, Poland

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5.1 Introduction

Urban parks are indispensable to proper functioning of cities and strongly affect the quality of life of city inhabitants (Camargo et al., 2017; Koramaz & Türkoğlu, 2018). Some of them also play a fundamental function as facilities for recreational activities (Iqbal & Ceccato, 2015, 2016). However, if parks feel unsafe, people are less likely to spend time in them. A major factor affecting the quality of urban spaces, parks included, is undoubtedly fear of crime (Franklin et al., 2008).

Although levels of fear are affected by a multitude of factors (Franklin et al., 2008), the characteristics of the physical and social environments of a park are important determinants of safety perceptions declared by park users (Ceccato & Hansson, 2013; Iqbal & Ceccato, 2016). In order to measure the relationship between the quality of the environment of a park and safety, researchers have long relied on Crime Prevention Through Environmental Design (CPTED) (Jeffery, 1971). CPTED is a strategy (or a set of principles) aiming at reducing crime and improving the sense of safety (Iqbal & Ceccato, 2016). CPTED has already been used in studies devoted to residential districts (Armitage, 2018; Atlas, 2008; Cozens et al., 2001; Czapska, 2012; Klima et al., 2016; Lee et al., 2016; Sohn, 2016), regenerated areas (Carter et al., 2003), university campuses (Cozens & Sun, 2018), transportation systems (Abenoza et al., 2018; Ceccato, 2013; Ceccato & Uittenbogaard, 2014; Newton & Ceccato, 2015) and parks (Bazregari & Ostovareh, 2016; Beeler, 2011; Ceccato & Hansson, 2013; Iqbal & Ceccato, 2016; Salmani et al., 2015).

The aim of this study is to determine safety perceptions of users of an urban park and highlight elements that contribute to poor perceived safety. The analysis is focused on an urban park in Poznań, Poland—the Cytadela Park—to detect the issues that contribute to poor perceived safety by applying the principles of CPTED. This aim was accomplished by analyzing safety by the time of the day, and in relation to the physical and social environments of the park.

The analysis of a park in a Polish city constitutes an interesting case study. First, in Poland, as in many other European and Northern American cities, urban parks are frequent crime scenes. As many as 11.1 percent of all fights and batteries, 10.6 percent of rapes, 8.8 percent of personal injuries, 7.3 percent of

cases of theft, 5.8 percent of assault and robberies, 5.5 percent of cases of breaking and entering and 5.2 percent of homicides occur in parks (Police statistics, 2016). At the same time, they are places of recreation. In Poznań, in particular, the use of parks as recreational areas is one of the most popular active pastimes and its role is increasing (The City of Poznań, 2013), therefore it is worth taking a closer look at the declared safety perceptions by park users in a broader context. This is particularly relevant considering that results of studies conducted among the inhabitants of Poznań in the years 2002–2013 (The City of Poznań, 2013) showed that residents declared relatively lower safety perceptions in urban parks and walking areas than elsewhere in the city (own home, neighborhood, train/bus stations and bus/tram stops, city center, urban parks and walking areas, residential districts with large-panel residential buildings) for both night time and day time.

Finally, another reason for having a Polish case study is the fact that CPTED principles have not been much discussed in the literature on examples from Poland (Czapska, 2012; Klima et al., 2016). Applying CPTED principles to a public place such as Cytadela Park, located in the liberal city of Poznań, may serve as a good example for other municipalities.

5.2 Theoretical background

The origins and development of CPTED

The foundations of CPTED can be traced back to the studies of Jane Jacobs who found that the "the bedrock attribute of a successful city district is that a person must feel personally safe and secure on the street" (Jacobs, 1961, p. 30). Similarly, Angel (1968), who studied street crime in Oakland claimed that the urban environment can have a direct impact on crime rate by separating certain areas, reducing or increasing access to others by creating or eliminating barriers. He pointed out that crime level is inversely proportional to human activity in the streets.

The role of environment in affecting the opportunities was discussed in depth by Jeffery (1971), who coined the term Crime Prevention Through Environmental Design. This author paid particular attention to the role of the environment in creating positive and negative experiences in potential perpetrators. He claimed that the environment can be used to control human behavior. About the same time, Newman (1972) also devoted his work to establish links between safety and architectural solutions. According to Newman, safety depends on symbolic and actual barriers which separate a given area, what he called 'Defensible space'. A defensible space must contain two elements. First, it must provide people with the ability to observe but, at the same time, also be observed. Second, inhabitants must be ready to intervene or inform the authorities in the case of a crime being committed.

There are six first-generation CPTED concepts: territoriality, surveillance, access control, target hardening, image of the place/maintenance and activity support. The notion of *territoriality* is a key term in CPTED. It relies on clear

demarcation of areas by placing visible boundaries between different types of space. Its other goal is to reinforce the sense of ownership and belonging to develop a sense of owner's care for the given space in the users' minds. This demarcation may come in different forms: symbolic barriers in the form of signs, lines, inscriptions, changes in the color of walls or pavement, as well as actual barriers, i.e., the positioning of buildings, guard rails, fences, park/street furniture or proper shaping of vegetation (Reynald & Elffers, 2009). CPTED also has other components. The purpose of *surveillance* is to reduce the sense of anonymity and to improve the natural disposition of people to observe their surroundings. *Natural surveillance* is performed spontaneously by inhabitants or users of a given area during their daily routines.

Access control is another component of CPTED that involves a clear demarcation of different types of space and creating areas with privileged user access to private and semi-private zones. Its purpose is to reinforce the sense of care about one's "own" space, liquidation of possible escape routes and creating a sense of being watched. Access control may be provided by installing barriers, enclosures and entry portals in a given space (Iqbal & Ceccato, 2016). In addition, access control may be reinforced by *target hardening*. Target hardening is the most controversial component among CPTED's principles, since it involves installation of anti-burglary doors, appropriate locks, use of damage-resistant materials, and use of security alarm systems in houses and vehicles.

Safety is also about the maintenance and image of an area. The purpose of *image of a place/maintenance* is to liquidate the sense of anonymity, increase the sense of safety of authorized users and create social connections. This can be achieved as early as during the design phase by the selection of appropriate materials and plants, which reduces maintenance costs and facilitates repairs. Finally, *activity support* calls for shaping the space and using signs and markings to encourage people to use it in an appropriate manner. This has an impact on surveillance and strengthens social connections (Cozens et al., 2005). These basic principles of CPTED have evolved into what it is called "the CPTED second generation" including issues of social cohesion, connectivity, community culture and capacity threshold, but will not be discussed further since they are less relevant for the study of safety in parks.

CPTED applied to parks

Despite not being vast, the international literature contains examples of the use of CPTED principles to evaluate safety in urban parks. An example is the study by Hilborn (2009) who discussed the issues of risk and protective features of the physical environment in a park. This study is particular useful for conducting audits based on CPTED principles as it contains questions supporting the evaluation of lighting, sight lines, movement predictors, entrapments, signs, activity generators, maintenance, usage diversity, formal surveillance, and isolation. The article can also be used as a template for interviews with park users. In the same vein, there were other few studies, one being by Beeler (2011) who

studied 18 parks in Berlin using surveys and field inspections. Jorgensen et al. (2012) studied the effect of concealment, presence or absence of people at recreation, and gender on fear of crime. Using CPTED principles as a background, Ceccato and Hansson (2013) assessed perceived safety in a park in Vilnius, Lithuania, using crime mapping, safety walks and interviews. Their study demonstrated advantages and challenges brought by these methods and drew implications for local urban planning.

Iqbal and Ceccato (2016) focused on assessing the use of CPTED principles to a park in Stockholm, Sweden. Authors employed a mixed method approach (crime mapping, field inspection, people counting, interviews) to provide a comprehensive view of safety problems in that highly crime-ridden inner-city park. Territoriality and target hardening were the two dimensions of CPTED more easily identified in the park. The authors noticed that the biggest challenge in using CPTED principles is the fact that some of these dimensions overlap each other when applied to features of a park. They also found other limitations, such as the inability of these principles to take into consideration the changing nature of parks seasonally or to simply analyze the park without taking its surroundings into consideration.

5.3 Framing the study case

This study focuses on Cytadela Park (Figure 5.1), which is the largest park in the municipality of Poznan, Poland, and has an area of 1 km^2. In the park

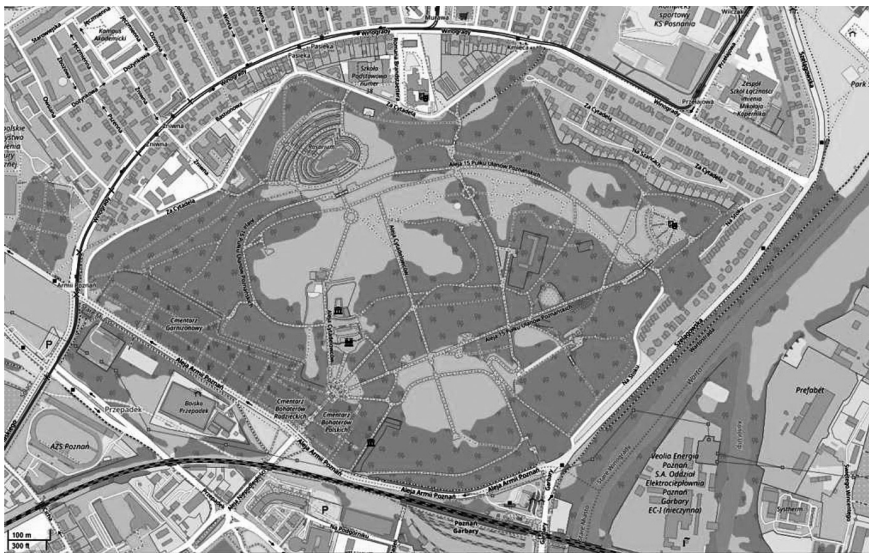


Figure 5.1 Cytadela Park.

Source: openstreetmap.org.

there are fortifications (ravelins, bastions, trestle bridges, gates), cemeteries (including war cemeteries), two military museums, monuments, sculptures, and an amphitheater. The park also has two restaurants, which are open throughout the year, two open-air gyms and playgrounds for children. The size of the park, its location in the city center and various forms of terrain use attract many types of users: walkers (also with children or dogs), runners, cyclists, roller-skaters, people of all ages. In general, the park generates considerable human traffic. It is worth noting at this point that the central part of the park is well-maintained and organized (Figure 5.2), while its outskirts, where no trails are established, are the exact opposite.

Poznań is located in western Poland, half way between Warsaw and Berlin. It is inhabited by almost 540,000 people and covers an area of 261.9 km^2. Urban vegetation covers 21.1 percent of the city's area; however, this also includes cemeteries and forests. There are 40 parks and they cover 5.3 percent of the city area. As many as 70 percent of Poznań inhabitants regularly use the city's recreational areas (The City of Poznań, 2013).

The occurrence of selected types of crime is greater in the Cytadela Park than it is in other administrative units of Poznań. This applies to car theft and drug offences but the exact location of these crimes is not provided by the local Police for this study.

Figure 5.2 Rosarium in Cytadela Park.
Source: author's photograph.

Methods

The primary method of data collection used in this study is an anonymous survey conducted with 501 users of the Cytadela Park (251 women and 250 men) about crime risk between October 2017 and January 2018. The survey was conducted by 51 geography students, who received proper training in the class, for the needs of the subject 'crime geography'. The response rate was 30 percent. There were no major problems with people's reactions to surveyors reported by students.

This chapter is also based on data collected through inventory, park observations and interviews with park users. The inventory was carried out by the author in September 2017 and covered recognition of land use, maintenance, problematic areas, location of street lights, rubbish bins and surveillance. The park observations were carried out four times in a good weather in September 2017 (10.00–12.00 and 16.00–18.00 on weekdays and 12.00–14.00 during the weekend to observe users during different hours of the day). Interviews were organized during inventory with two women and two men and were more like spontaneous, semi-structured conversations.

CPTED principles were used as a background for the analysis presented in Section 5 (Table 5.1) following the steps illustrated by previous studies in the international literature.

5.4 Results

The presentation of results is preceded by general information regarding the frequency and modes of use of the park. Then the first part of this section discusses safety by the time of the day. The second part focuses on the potential links between physical and social environment of the park and safety. The third part is devoted to safety perceptions by park users, including suggestions for safety improvements.

The survey results show that the frequency of park use is high: 58.8 percent of respondents visit a park at least once per week (10.6 percent every day, 11.0 percent four to six times per week, 22.4 percent two to three times per week, 14.8 percent once per week). It is therefore assumed that the knowledge of the

Table 5.1 CPTED principles and used methods

CPTED principles	*Survey*	*Inventory*	*Park observations*	*Interviews*
Territoriality	x	x	x	
Surveillance	x	x	x	x
Access control		x	x	
Target hardening		x		x
Activity support	x	x	x	
Image of the place/ maintenance	x	x	x	x

study area is relatively good, users are familiar with the park. The park is used in various ways: walking is one of the most popular uses of a park: 40.2 percent of all respondents go for walks alone, 36.4 percent with family, 16.2 percent with children. Physical activity is another significant reason for visiting a park: 25.8 percent go jogging, 17.6 percent go cycling, 9.8 percent go roller-skating and 8.4 percent use the outdoor gyms. Finally, 18.8 percent of respondents use the park for other purposes, e.g., walking the dog, walks with their friends, as a shortcut to work or for resting.

Being victimized by a crime or witnessing one is important to determine safety perceptions (Demaris & Kaukinen, 2005). However, the majority of respondents (69.2 percent) have never witnessed a crime at all, and more (85.3 percent) have never witnessed a crime in a park before. These values were even higher when it comes to being a victim of a crime—86.3 percent have never been a victim of a crime, while 97.9 percent have never been a victim of a crime committed in a park. Very few people who were a victim of a crime reported it to the police. Only a fifth of the respondents stated they were concerned by the risk of being a victim of crime in the park.

Safety by the time of the day

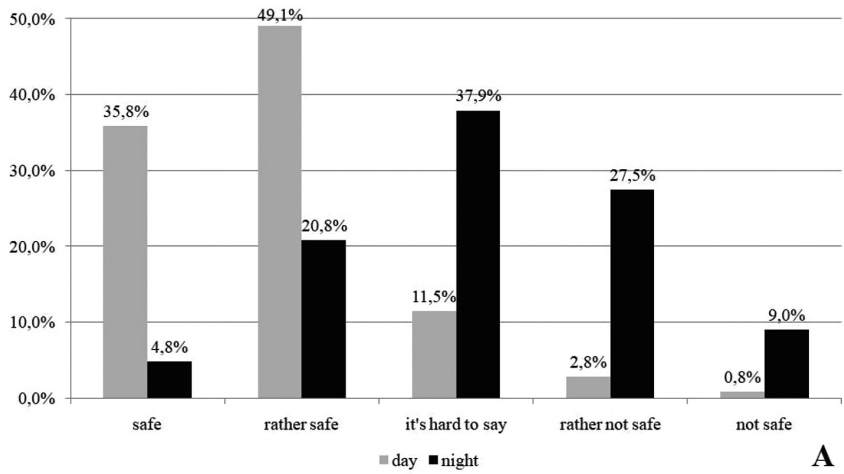
Time of day had a considerable impact on the sense of safety of Cytadela Park users (Figure 5.3(a)). As many as 84.9 percent of respondents feel safe during the day, however, after dusk this number dropped significantly, to 25.7 percent. Conversely, 3.6 percent said they do not feel safe during the day, and 36.5 percent do not feel safe after dusk. It is also noteworthy that in the case of night-time, the answer "difficult to say" was the most frequent. Men felt safer than women during the day (respectively 85.2 percent and 84.71 percent positive responses). After dark, the situation was the opposite, women felt safer than men (31.15 percent vs. 20.4 percent positive responses). The safety diminished with age. Older visitors tend to feel less safe, regardless of the time of day. The groups in the ages 50 to 59 and 60+ and more felt the most unsafe (respectively 6.06 percent and 11.54 percent negative answers during the day, 44.12 percent and 69.24 percent after dusk).

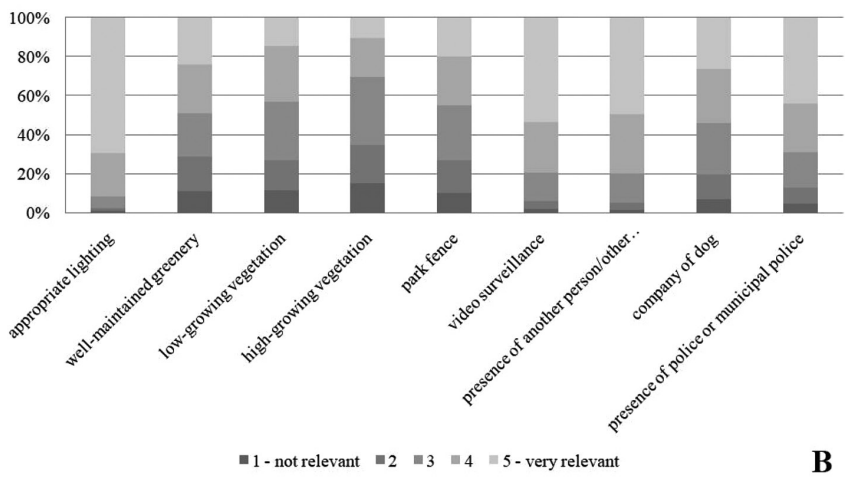
Variation of safety perceptions by the time of day may be associated with the fact that relatively few people use the park during the dark hours of the day, in the evening, so they do not have an opinion on the sense of safety at that time. At this point, it is also worth mentioning the groups of night-time users of the park. The first group are the members of "Night Runners Poznań", who have been holding their regular weekly training sessions in the Cytadela Park since 2012 (by the end of January 2019 there have been 322 such meetings). The second group are people who use the park as a shortcut from the city center to the northern parts of the city. Interviews conducted with members of both of these groups show that they do not feel threatened in the park at night, mostly due to being part of a large group and being familiar with the park environments.

Safety and physical and social environment of the park

Figure 5.3(b) illustrates park users' safety perceptions in relation to the physical and social environmental features of the park. Appropriate lighting, well-maintained vegetation, and low-growing vegetation which allow visibility (observation and being observed), along with video surveillance show indications of having a positive effect on respondents' safety perceptions of the park. Other features with a positive impact on the sense of safety are the presence of other people, the company of a dog, and the presence of police or municipal police patrols. Features such as tall or overgrown vegetation reduce visibility and thus create favorable conditions for crime (hiding places) and negatively affect perceived safety.

The survey results showed that the most important feature for park users' safety is appropriate lighting (92.0 percent responses). The Cytadela Park only





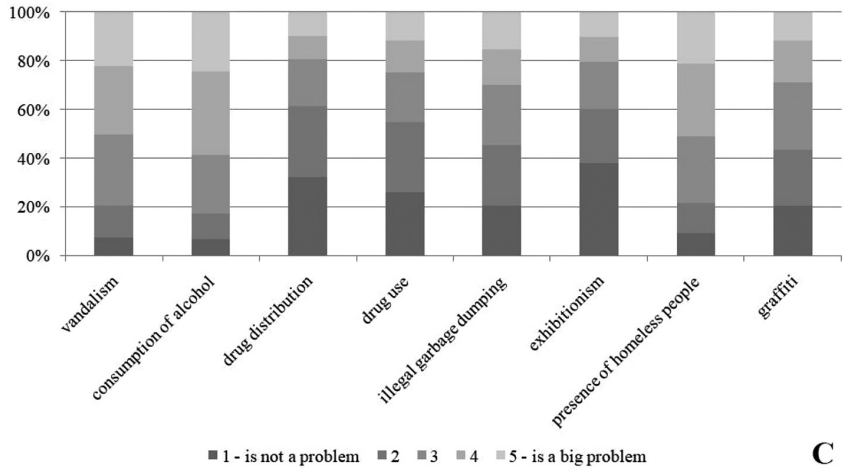


Figure 5.3 Survey results: (a) park users' safety perceptions—day and evening hours; (b) safety and physical and social environmental features of the park; (c) occurrence of selected negative safety phenomena in the park.

Source: author's own calculations based on survey results.

has lighting near the main paths in the central part of the park and in the rose garden. The majority of the park is unlit; therefore, the use of the park at night is very limited and only possible by either accepting walking in the dark or using a torch.

Another factor that also has an impact on safety is the company of another person/other persons (79.9 percent responses). Its favorable location between the city center and residential districts makes the park popular with people living in its vicinity, who use the park for various purposes. Owing to its great historic value and other attractions located in it, the park also attracts people living further away. As a result, the number of people in the park during the day is considerable. During the night, the park is used by the aforementioned "Night Runners Poznań" group. Their motto "You will never run alone" is another proof that the company of other people is conducive to safe use of the park.

Another factor that the respondents consider almost equally important as having other people's company is video surveillance (79.8 percent of responses). Video surveillance systems are installed in the park only near museums and restaurants. Finally, according to respondents, the presence of police/municipal police is also very important (69.3 percent positive answers). The company of dogs also influence the sense of safety of park users. The Cytadela Park is frequently used by dog owners as an area for walks.

Similar to other urban areas, parks may be sites of acts of social disorder, such as vandalism, consumption of alcohol, drug distribution, drug use, illegal garbage

dumping, exhibitionism, presence of homeless people and graffiti. They are important because they affect safety perceptions of park users (Figure 5.3(c)). The factors that most affect negatively safety perceptions are alcohol consumption (58.8 percent of "4" and "5" scores added together), the presence of homeless people (51.2 percent) and vandalism (50.2 percent). It is worth noting that only these three phenomena are considered a problem by more than 50 percent of respondents. Other negative phenomena, such as drug distribution, illegal garbage dumps or graffiti, are not frequently pointed out as a big problem of the park. Interestingly, although the problem of garbage is present in the park, e.g., in the form of bottles and cans left behind after illegal consumption of alcohol, this was not mentioned by respondents.

Suggestions for improvements

Maintenance is the biggest challenge to ensure safety of the park, in particular in the areas with fortifications and surrounding areas. Unfortunately, while a small part of fortification buildings is used and well preserved (such as museums), most of them are ruins and may put visitors in danger. These are also places of alcohol consumption, illegal garbage dumps and physical damage.

The paths in the park have mixed types of surfaces and offer varied lighting (Figure 5.4(a)). The hard paths have garbage bins and some are lit (Figure 5.4(b)) and the natural paths (mostly on the outskirts of park) lack this infrastructure. Appropriate lighting (which would be very expensive) and ensuring the possibility of visitors throwing garbage in the bins, would provide a better image of these parts of Cytadela Park and, consequently, raise safety level.

The park is a place where young people gather, drink alcohol and listen to the loud music. This is perceived to be a safety problem during the day, for instance in the amphitheater (Figure 5.4(c)) and after sunset, in the high-greenery areas. The aforementioned amphitheater is not well supervised and is poorly maintained, with no seats, uneven surfaces, no real stage. To maximize safety, this place should be completely renovated to host various events and strengthen activity support in this area.

5.5 Discussion of results

CPTED principles are useful as a reference to assess the safety of park users. In the case of the Cytadela Park in Poznań, elements of CPTED, such as the image of the place/maintenance and surveillance, have the greatest impact on park users' perceived safety.

The most important features influencing safety (or lack of) were appropriate lighting, the company of another person/other persons and the presence of video surveillance. As previously mentioned, Cytadela Park is not well lit, and appropriate lighting would certainly positively affect park users' safety. Godbey and Mowen (2010) noted that lighting drastically improves safety and security in a park. Installation of additional lights may encourage

Figure 5.4 (a) Fortification ruins and mixed types of path surfaces; (b) lit paths by night; (c) amphitheater.

Source: author's photographs.

people to use parks without them being worried for their safety. The same conclusions were drawn from the study by Fletcher (1983). This was also discussed in detail by Clarke (2008) who cites research conducted in the USA and in Great Britain which evaluated the impact of street lighting improvement on crimes committed at night. In six out of 11 cases described, improving street lighting yielded the desired effect of reducing the number of crimes committed.

The presence of other people was discussed by Özgüner and Kendle (2006) who claim that it has a positive impact on perceived safety. Cytadela is often used by physically active people, due to its good location and the possibility of use for various purposes. Note that the sense of safety is very important for those who use parks for physical activity (Costigan et al., 2017).

There is no video surveillance in the park, however there is an expectation that it would positively affect park users' safety. Surette and Stephenson (2019) pointed out the relationship between safety and video surveillance in their study. According to Ratcliffe (2006), the primary purpose of video surveillance is to increase the risk of being caught as experienced by the potential perpetrator and, if a crime is committed, facilitate its detection and the arrest of the perpetrator. However, studies by Ratcliffe (2006) and Ratcliffe et al. (2009) demonstrated that, even though in general cameras can serve to reduce criminal activity, there are locations where there is no benefit from installing them. Studies conducted by Brands and Schwanen (2014) involving night-time users of three Dutch cities— Utrecht, Rotterdam and Groningen—show that video surveillance has a very low impact on the sense of safety compared with on-street policing. Their studies were further expanded by Brands et al. (2015).

Vegetation is very important from the perspective of safety. In subject literature, areas with dense vegetation which limits visibility and can provide hiding places for potential attackers are considered to correlate positively with fear of crime (Talbot & Kaplan, 1984; Michael & Hull, 1994). Vegetation may also be an element that influences territoriality (Troy et al., 2012) and the better maintained it is, the stronger the effect (Brown & Bentley, 1993).

Safety in the park can be also influenced by the presence of selected negative phenomena in the park. The study of Groff and McCord (2011) showed that the sense of safety in parks is not related to the threat of becoming a victim of a crime per se, but to the presence of particular groups of people in parks. Hillborn (2009) stated that a park is considered unsafe when criminal activity and lack of order have become the norm and local users consider it dangerous, avoid it or limit the time spent in it to the bare minimum. Criminal activity and lack of order are caused by vandalism, littering, animal feces, excessive consumption of alcohol, use of drugs as well as public sex, which may become the dominant activities in the park.

The top three negative issues in Cytadela Park are: alcohol consumption, the presence of homeless people and vandalism. In general, the consumption of alcohol in public places is prohibited in Poland. In Cytadela Park it is permitted

only in designated areas: in restaurants and their gardens. While the well-maintained parts of the park show no trace of illegal alcohol consumption, numerous liquor bottles and beer cans can be found at the outskirts of the park, especially near the remains of fortifications, as proof that alcohol is in fact consumed there.

It is interesting that the presence of homeless people is considered one of the major problems of the park by the respondents. Field inspections did not confirm its occurrence in the Cytadela Park. Additionally, studies of the homeless have been conducted in Poznań to learn about the places in which they stay, and parks are seldom listed. Unfortunately, detailed information on the locations chosen by the homeless is not provided in these studies (Municipal Family Support Centre, 2015). The problem of the homeless in the context of CPTED was discussed by Saville and Atlas (2016). According to the authors, typical illicit behaviors related to homelessness are: panhandling, loitering, trespassing, petty theft, littering and garbage, and bathroom incivility.

Vandalism, the third major negative phenomenon indicated by the respondents, is clearly visible in the park. The activity of vandals is especially pronounced in areas where no walking paths have been established, near entrances to fortifications as well as at the outskirts of the park. A good example of such activity is the destruction of information boards on fortifications or the removal of security devices preventing entrance to the fortifications. The central part of the park is free of damage.

Other, less severe, problems were drug distribution, illegal garbage dumps or graffiti. Studies by Kotlaja et al. (2018) showed that parks are not a "safe" environment for distribution and use of illegal drugs. Fletcher (1983) showed that vandalism and exhibitionism are not problems that are noticed by park users. Studies by Robinson et al. (2003) confirmed that garbage in public spaces may heighten the sense of fear.

5.6 Conclusions and recommendations

This study contributes to the research by determining the safety of urban park users in Cytadela Park in Poznań, Poland, and highlighting spots that contribute to poor perceived safety using CPTED principles. This study shows that, in the largest park of Poznań, perception of safety differs according to the time of day. It is higher during the day and much lower after dark. Environmental design elements have an impact on perceived safety. The most important for park users are appropriate lighting and video surveillance. Respondents feel safe when someone else is around, i.e., other persons, police or city guards, but also their dogs. They feel unsafe in the presence of alcohol consumption, or in presence of homeless people and vandalism.

The park can be split into two parts regarding safety perceptions of users. A neat part, with alleys, lighting, maintained greenery, several meeting places (restaurants, outdoor gyms, playgrounds) is eagerly used by people and

considered safe. The second part, located on the park outskirts and near the fortifications and cemeteries, mostly without designated alleys, is unlit with few people around. From a safety perspective, both parts can be improved. Management of the park could consider organizing more social events that could bring more people to the area. Renovation of the amphitheater could be the starting point as this place is not frequently used due to poor technical conditions. There is much more work required with the second part of the park, which is neglected and requires huge financial resources, especially for renovation of fortifications and cemeteries. In addition, adding benches can improve surveillance while garbage bins and lighting can make it friendlier for park users.

Parks should be places where time can be spent in safe conditions, regardless of users' activity. Ensuring proper maintenance is a key issue in achieving comfortable use. Appropriate lighting may extend the hours of park use, promote social interactions and can lead to strengthening of natural surveillance. Although the results found here cannot be generalized to other parks elsewhere and further research using CPTED principles in parks is needed, the case of Cytadela Park provides a starting point to discuss the usefulness of CPTED principles in other Polish cities.

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