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Crime Prevention Through Environmental Design and Crime Rates in Apartment Settings

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Running head: CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN
AND CRIME RATES IN APARTMENT SETTINGS

by

Robyn M. Radosevich

A Research Proposal Presented in Partial Fulfillment
of the Requirements for the Degree
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August, 2012

CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN
AND CRIME RATES IN APARTMENT COMPLEXES

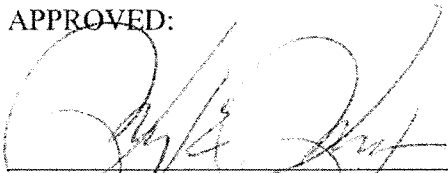
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Abstract

This comparative study has employed qualitative and quantitative methods to examine the implications of the Crime Prevention through Environmental Design (CPTED) theory. Due to significant inconsistencies in prior research, the effectiveness of CPTED in reducing crime rates was examined. Research analysis has examined the elements of CPTED present at three sample apartment complexes located in a large western city and determined if the apartment settings with physical elements consistent with CPTED experienced lower crime rates. Observational qualitative data and quantitative crime rates were applied in a comparative analysis.

Keywords: criminology, crime prevention through environmental design, environmental crime

Table of Contents

Chapter	Page
1. INTRODUCTION.....	6
Statement of the Problem.....	6
Overview of the Problem.....	7
Purpose.....	8
Definitions.....	8
Limitations.....	9
2. REVIEW OF LITERATURE.....	11
Theoretical Development.....	11
Positive Implications of CPTED.....	13
Five Oaks.....	14
Clason Point.....	15
Castle Square.....	16
North Trail.....	17
Ohio State University.....	18
Inconclusive or Negative Implications of CPTED.....	20
Genesis Park.....	20
Lockwood Gardens.....	21
South Korea.....	23
Summary.....	24
3. METHOD.....	25
Research Design.....	25
Procedures.....	26
Sample.....	26
Complex A.....	27
Complex B.....	27
Complex C.....	27
Instrumentation.....	27
Data Collection.....	28
Data Analysis.....	29
Summary.....	29
4. RESULTS.....	31
Elements of CPTED.....	31
Complex A.....	31
Complex B.....	34
Complex C.....	38
Reported Crime Incidents.....	40
Complex A.....	41
Complex B.....	44
Complex C.....	46

Summary.....	48
5. DISSCUSSION.....	50
Implications of CPTED.....	50
Complex A.....	51
Complex B.....	52
Complex C.....	54
Summary.....	56
REFERENCES.....	58
APPENDICES	
A. CPTED Assessment Form.....	61
B. Tables.....	63

Chapter 1

INTRODUCTION

Criminology theorists have recognized the impact of the physical environment on crime for decades. Observations of ‘dangerous places’ and the locations of offenders have been studied since the 19th century (Cozens, 2008). The works of Jacobs (1961), Jeffery (1969), and Newman (1972) proposed the potential influence of urban environments and building designs on criminal activity. Although theories of environmental criminology continue to evolve, it was Jeffery (1969) who first suggested that crime cannot be controlled through individual offenders but rather could be controlled through manipulation of the environment. The theory of Crime Prevention through Environmental Design (CPTED) had developed from Jeffery’s (1969) concepts. The strategies of CPTED involve the implementation of various physical elements designed to eliminate opportunities for criminal behavior. Police officers, private security companies, architects, and urban planners have used these strategies since the early 1970s (Parnaby, 2006). Despite the popularity of CPTED, the literature is inconsistent regarding the implications for CPTED in reducing crime rates. Several studies have found significant reductions in crime rates following the implementation of CPTED elements while other research has found little to no reduction in crime rates.

Statement of Problem

Past research has explored the effectiveness of CPTED in reducing crime rates in various private and public environments. Many researchers have chosen to examine the crime rates prior to and following the implementation of CPTED elements (Carter, Carter, & Dannenberg, 2003; Feins, Epstein, & Widom, 1997; Gardiner, 1978; Newman, 1996). Although this method is appropriate for an analysis of CPTED, it is also beneficial to examine the CPTED elements

already present at different environmental settings to be used for comparison with their respective crime rates. The gap in present research using this method requires further examination.

Overview of Problem

Residences are often thought to be safe places where individuals spend significant amounts of their time. An examination of crime rates show that a large number of crimes occur in residential settings. The 2010 Uniform Crime Report determined that burglaries of residential properties accounted for 73.9 percent of all reported burglaries (Federal Bureau of Investigation, 2011). In addition to property crimes, violent crimes also occur with frequency at residences. On average from 2004 to 2008, 33.7 percent of violent crimes occurred in or near the victim's residence (Bureau of Justice Statistics, 2012). Additionally, it was also estimated that 17.3 percent of robberies occurred at residences (Federal Bureau of Investigation, 2011). These statistics confirm that property and violent crimes occur with frequency in residential settings.

Although crimes occur in a variety of residential buildings, this study has focused on rental housing. In 2010, an estimated 34.9 percent of Americans lived in rental housing units (U.S. Census Bureau, 2011). With over one-third of the population residing in this category of housing, efforts in crime prevention for this environment are vital.

Since the development of Jeffery's (1969) theory of CPTED, many researchers have explored its implications for reducing crime rates. Although there are several studies testing CPTED, the results are largely inconsistent. Multiple studies have established a reduction in crime rates following the implementation of CPTED elements (Carter, Carter, & Dannenberg, 2003; Feins, Epstein, & Widom, 1997; Gardiner, 1978; Newman, 1996; Tseng, Duane, & Hadiprino, 2004). Other studies have found little to no reduction in crime rates (Chang, 2011;

Feins, Epstein, & Widom, 1997). In addition to inconsistent research, several theorists express criticism for CPTED (Atlas, 1991; Cozens, Hillier, & Prescott, 2001; Hillier, 1973). Others acknowledge its limitations similar to Gardiner (1978) who states that the redesign of the physical environment is not the key itself to crime prevention (p. 13). With such vast inconsistencies regarding the implications of CPTED, there is still much needed additional research regarding the influence of this theory in reducing crime rates.

Purpose

The inconsistent findings regarding the effectiveness of CPTED require additional research. Due to high crime rates in residential settings with a large portion of the population residing in rental housing, apartment complexes were used to further explore CPTED. This study employed qualitative and quantitative methods using a comparative analysis to examine the elements of CPTED at three apartment complexes and their respective crime rates. The purpose of the study was to examine the elements of CPTED present at three apartment complexes and determine if the apartments with physical elements consistent with CPTED experience lower crime rates.

Definitions

Crime Prevention through Environmental Design (CPTED)

Crime Prevention through Environmental Design is the theory that suggests the proper design and effective use of the environment can reduce incidents of crime, reduce the fear of crime, and improve the quality of life (Crowe, 2000). Cozens and Hillier (2008) add that CPTED is based upon the assumption that the offender engages in rational decision-making.

Defensible Space

Newman (1972) defines defensible space as the range of mechanisms – real and symbolic barriers, strongly defined areas of influence, and improved opportunities for surveillance – that combine to bring an environment under the control of its residents” (p. 3).

Environmental Criminology

Environmental criminology is the study of crime as it relates to particular spatial locations and how behavior is influenced by place-based factors (Cozens, 2008; Cozens, 2011).

Limitations

There are limitations that existed with this research project. To prevent possible influences from varying socio-economic levels, the selected apartment complexes had advertised comparable rental rates. This study did not consider the income levels of the residents but only examined the physical elements of the complexes. Although a sample comprised of complexes with similar rates does not guarantee similar income levels of residents, it may assist in reducing the extent of outside influences on crime rates. Additionally, the use of a sample with a specific rental rate range will not be applicable to the entire apartment complex population. Because the focus of the present study was an evaluation of CPTED variables, it was necessary to eliminate other possible influences on crime rates.

Another limitation of this study relates to the collection of crime rates for each complex. The online crime mapping service that was used, *CrimeReports.com*, limits searches for reported crime incidents for the past six months. To gather data for the three apartment complexes for the same period, crime incidents occurring in the past five months were included in the study. This obstacle may have inhibited the gathering of enough crime rate data to draw accurate conclusions regarding the impact of CPTED on crime rates.

Also related to data collection of crime rates, it is important to note the crime incidents occurring at the apartment complexes must have been reported to *CrimeReports.com*. This required the reporting of the criminal incidents to local law enforcement that had to then be reported to *CrimeReports.com*. Due to the underreporting of crimes by victims as well as possible clerical issues in reporting crimes to *CrimeReports.com*, it is speculated that more crimes were committed than were available on the online crime mapping system.

Chapter 2

REVIEW OF LITERATURE

The sources for this literature review were obtained through access of Regis University online library resources and various online academic databases. Databases that were accessed include: Academic OneFile, Academic Search Premier, EBSCOhost, LegalTrac, SAGE, and ScienceDirect. Additionally, a university library provided the books referenced in this paper. The following search terms and keywords were entered into the mentioned databases to search for relative literature: “crime prevention through environmental design,” “environmental criminology,” “crime by design,” “territoriality,” “access control,” “natural surveillance,” and “activity support”. Using the obtained information, a thorough literature review of the theoretical development of CPTED was conducted. Examinations of prior research finding positive and inconclusive or negative implications of CPTED were also conducted.

Theoretical Development

The early writings of Jacobs in *The Death and Life of Great American Cities* (1961) argued that the traditional methods of city planning were responsible for the urban decline and disorder of inner city areas. Jacobs suggested the principles used in urban design were detrimental to community safety. She demanded significant change to the principles of urban planning to reform inner city areas. The importance of pedestrian traffic in urban areas was emphasized to increase the number of “eyes on the street” to deter potential criminal activity.

Jeffery (1969) continued to examine environmental crime and originally coined the phrase ‘crime prevention through environmental design.’ He argued that crime cannot be managed by addressing individual offenders but rather through the control of the physical environment. Similar to Jacobs (1961), Jeffery acknowledged the importance of urban planning

to reduce the opportunities for criminal activity. He proposed that building designs with unprotected elevators, stairwells, basements, and passageways provide opportunities for criminal activity. In addition to environmental design and crime, he also addressed the potential roles of other factors including biology and psychology.

The works of Jacobs (1961) and Jeffery (1969) introduced the relationship between environmental design and crime prevention. Continuing to build upon these ideas, Newman's *Defensible Space* (1972) is often considered the most influential contribution to modern CPTED theory. Newman defined 'defensible space' as "the range of mechanisms – real and symbolic barriers, strongly defined areas of influence, and improved opportunities for surveillance – that combine to bring an environment under the control of its residents" (p. 3). Four characteristics of defensible space were presented to enhance residential building design and enable residents to control their environment. The first element of environmental design was territoriality, which is the capacity of the physical environment to create perceived zones of territorial influences. Territoriality promotes a sense of ownership and the desire to protect a defined space. Fences, signs, landscaping, and maintenance can be used to promote and express ownership. Potential intruders also can be identified in well-defined spaces. Newman's second element was natural surveillance, which is the configuration of physical design to provide opportunities for surveillance. Newman suggested that natural surveillance can have a significant impact in the creation of a secure and peaceful environment. Effective lighting can be used to promote the natural surveillance from residents. Landscaping bushes and plants can enhance visibility and provides enhanced surveillance. The final elements of environmental design were image and milieu. Newman proposed that public housing often appeared different from other residential buildings. The negative image and stigma of public housing may affect its vulnerability to

criminal activity. The milieu was suggested to be influential by increasing or decreasing the safety of residents in the area. Heavily trafficked roads and walkways may provide safety due to the increased visibility. Newman's four characteristics of defensible space provide the basic elements for contemporary CPTED.

Building upon the elements of CPTED from Newman (1972), Crowe (2000) proposed the additional strategy of natural access control. This concept seeks to decrease opportunity for criminal activity by denying access to a potential crime target. Access control also attempts to create the perception of risk to potential offenders. Crowe (2000) suggested access control can be organized through the use of guards, mechanical by the use of locks, or natural through effective spatial definition.

In addition to the CPTED principles provided by Newman (1972) and Crowe (2000), Cozens (2002) discussed an additional strategy of CPTED. Cozens (2002) suggested that activity support encourages residents to engage in legitimate behavior in a shared, public space. Organized activities for community members can be used to discourage criminal activities and promote community involvement. Resident activities in shared spaces can also provide opportunities for natural surveillance of outsiders and promote ownership. Basketball courts and playgrounds can be used for encouraging this type of resident participation. The theoretical works of these criminologists have contributed to the development of modern CPTED.

Positive Implications of CPTED

The evolution of CPTED has probed the study of the relationship between crime and the physical environment. Many of the studies examined residential settings, commercial buildings, and public properties. The following studies share positive implications regarding the effectiveness of CPTED and its ability to influence a reduction in crime rates.

In addition to *Defensible Space* (1972), Newman continued to explain and explore the principles of CPTED in *Creating Defensible Space* (1996). Implementations of CPTED programs were described for two neighborhoods: Five Oaks and Clason Point.

Five Oaks

High crime rates and an abundance of prostitutes and drug dealers were common in the Five Oaks neighborhood of Dayton, Ohio. Newman (1996) assisted in the implementation of several modifications of CPTED based primarily upon access control. The transformation began with the division of the Five Oaks community into several 'mini-neighborhoods.' Each mini-neighborhood was renamed and provided with one entrance portal that also served as the exit. Access control was also employed through the installation of locked gates at roadways closed to vehicle traffic. Reflectors were also positioned on the gates to provide illumination at night. Locked gates restricted access to rear alleys; however, residents of each mini-neighborhood could access certain sections for parking and garbage collection.

A comparison of the crimes rates prior to and following the modifications of Five Oaks was used to examine the effectiveness of the CPTED changes. The researcher obtained crime rates from the Dayton Police Department. In the year following the modifications, overall crime had reduced by 26 percent and violent crime had reduced by 50 percent in the Five Oaks neighborhood. It was also reported that crimes rates of robbery, burglary, assault, and auto theft were the lowest they had been during the past five years. Overall crime in the remainder of Dayton had increased by one percent.

Although the CPTED modifications may have contributed to the reduction in crime rates, it is important to note that there was an enhanced police presence in this neighborhood as well. Following the implementation of the mini-neighborhoods and locked gates, police officers

concentrated their efforts in this area to build community rapport and address the prostitution and drug sales problems. The CPTED modifications as well as the enhanced police presence both likely contributed to the significant reduction in crime rates.

Clason Point

Clason Point, a public housing project in the Bronx of New York City, suffered from high crime rates. The project consisted of 400 densely arranged row houses with extremely limited resident parking. Newman (1996) reported the buildings were unkempt and effectively portrayed the stereotypical image of public housing. Residents had described the open space in the center of Clason Point to be extremely dangerous. In 1969, the planning and modifications of this project began and focused on activity support, as suggested by Cozens (2002), and territoriality. Modifications to the central vicinity of the project created an inviting area designed for the congregation of residents. The various ages of residents were considered for the design of three separate zones in the space. A large playground area was created for young children while a bright, patterned area was to be used by teenagers. In addition, a conservative area was designed for the use of adults and elderly residents equipped with benches and checker tables. Territoriality and access control were established through the installation of high fences to secure the rear yard areas of the units. Decorative lighting and resurfacing of the buildings promoted resident ownership.

Crime rates for the area were obtained to conduct a comparison prior to and following the changes. Overall crime in the development had decreased by 54 percent in the year following the modifications. The overall combined crime rate for burglary, robbery, and assault was reduced by 61.5 percent.

Although the significant reduction in crime is apparent, the researcher does not address the changes in rates for the rest of the city. If crime in other areas also declined during the same period, the implications of CPTED would be questionable in the study.

Castle Square

Feins, Epstein, and Widom (1997) explored and reviewed the CPTED program established in Castle Square Apartments. Castle Square, a private apartment complex located in Boston, Massachusetts, experienced frequent burglaries, prostitution, drug activity, and violent crimes. The complex was comprised of 500 units ranging from seven-story buildings containing one and two bedroom apartments to buildings with stacked duplexes (two-story unit above two-story unit). Beginning in 1992, several CPTED elements were implemented throughout the complex following the transfer of the property to new management. Many of the changes utilized access control to discourage opportunities for criminal activity. Fencing and gates installed around the complex restricted access in certain areas while permitting residents full access in others by the use of a keycard. Vehicle access from nearby alleys into the complex was restricted through the installation of thick posts. Access into the basketball court and playground areas was limited to only allow entry from inside the complex. The installation of buzzers, intercoms, and surveillance systems allowed residents to control visitor access. Rooftop access doors were converted to emergency-exit doors only to limit access to the top floor apartments from potential burglars.

In addition to utilizing elements of access control, several changes were implemented to promote natural surveillance. Multiple pedestrian tunnels granting access into the complex from nearby streets were closed. As a replacement, a covered pedestrian walkway was installed that provided sufficient light and opportunities for natural surveillance. Clear glass and extra lighting

were installed in stairwells to enhance visibility. Increased police presence and hired security guards provided frequent patrols of the complex. The parking lots were equipped with cameras that were routinely monitored by security personnel. To promote ownership and territoriality, the community park located on the perimeter of Castle Square was cleaned by removing abandoned couches and mattresses. The park was redesigned with oriental garden elements with input from Chinese American residents. Enhanced landscaping, building maintenance, and updated painting also encouraged feelings of ownership.

The effectiveness of the CPTED changes was analyzed through an examination of the reported crimes occurring at Castle Square from 1990 to 1994. Over the four years examined, most crimes experienced steady declines. Violent crime experienced a 70 percent decrease and property crime experienced a 44 percent decrease from 1992 to 1994. Burglary and vehicle thefts experienced fluctuating rates; however, the rates were still lower than they were prior to the CPTED changes. Overall crime from 1992 to 1994 had reduced by 48 percent. The significant reduction in reported crimes suggests a relationship between CPTED and lower crime rates.

North Trail

During a time of high crime rates in Sarasota, Florida, Carter, Carter, and Dannenberg (2003) worked with city planners to implement several principles of CPTED. The researchers focused on the North Trail neighborhood with a desire to reduce prostitution and drug crimes. Beginning in 1992, city planners created a new zoning district that recommended developments in the area comply with CPTED principles. Although the recommendations were not requirements, most property owners were reportedly willing to comply. Several variables of CPTED were implemented in the neighborhood including the installation and maintenance of

outside lighting for building entrances, walkways, and parking areas. Landscaping in the area was modified with ground cover and canopy trees to enhance visibility and promote ownership. Shared space between residents and business users was created through the design of patios, balconies, and community areas. The researchers proposed the new changes would discourage illegal activity and create a comfortable environment for legal behavior.

To evaluate the changes and the effectiveness of the CPTED principles, crime rates were analyzed from 1990 to 1998 for both the North Trail neighborhood and the rest of Sarasota. Four measures of crime were used in the analysis: calls for police service, crimes against persons or property, drug crimes, and prostitution. From 1990 to 1998, the calls for police decreased in the North Trail neighborhood and increased in the rest of the city. The number of reported crimes against persons and property decreased in both the North Trail and the rest of Sarasota. The number of reported drug crimes increased in both the North Trail and the rest of the city; however, the increase for the North Trail neighborhood was significantly less than the increase for the rest of the city. In addition, the number of reported prostitution crimes decreased in the North Trail and increased in the rest of the Sarasota.

Although the results of the study suggest positive implications of CPTED, it is difficult to determine if the differences in crime rates were attributed to the CPTED changes in the North Trail. The decrease of reported crimes against persons and property and increase of reported drug crimes for both areas suggests that other factors may have attributed to the similar changes in crime rates.

Ohio State University

Due to crimes that occurred in campus parking garages, Tseng, Duane, and Hadiprino (2004) assisted Ohio State University with the implementation of CPTED elements of one

campus parking garage. High crime rates of the parking garages were generally attributed to nonviolent crimes, primarily theft and criminal damaging. To examine the effectiveness of CPTED, the researchers selected two campus parking garages for the study. One garage underwent various changes consistent with CPTED principles while the other garage remained unchanged to serve as a comparison. Both parking garages were used primarily by faculty and staff members and were on the perimeter of the campus. Several elements of access control, natural surveillance, and territorial reinforcement were applied to reduce crime in the experimental garage. New lights installed in the parking garage were brighter and unobstructed. The ceilings were repainted with white, reflective paint to enhance illumination. The installation of black chain-link inserts in the lower level wall openings were designed to improve access control. The inserts limited access and directed pedestrian traffic but did not significantly reduce overall visibility in this level. Landscaping overgrown shrubs and trees reduced potential hiding areas around the garage perimeter.

The number of reported crimes following the implementation of the CPTED elements was examined. Two years following the changes, overall crime in the experimental parking garage decreased by more than half while average crime in the other parking garages remained unchanged.

Although the decrease in reported crimes for the experimental garage suggests implications of CPTED, limitations regarding the strength of the data may not warrant such a conclusion. There were nine reported crimes in the experimental garage prior to the CPTED changes in 1999. The number of reported crimes in this garage decreased to two crimes reported in 2000 and three reported crimes in 2001. The low incidence of crime reported in a two-year period cannot conclusively confirm the effectiveness of CPTED.

Inconclusive or Negative Implications of CPTED

While the described studies suggest the effectiveness of CPTED and its ability to reduce crime rates, there is also research that does not reach the same conclusions.

In addition to an analysis of Castle Square Gardens, Feins, Epstein, and Widom (1997) also examined the CPTED programs implemented at Genesis Park and Lockwood Gardens.

Genesis Park

The neighborhood of Genesis Park had been described as the worst eight blocks in the city of Charlotte, North Carolina. High crime rates throughout the area were attributed to heroin and cocaine trafficking. In 1993, a nonprofit housing organization, in coordination with the Charlotte Police Department, began purchasing known drug rental houses in Genesis Park. The rental houses were rehabilitated and marketed to law-abiding, low-income families to encourage home ownership in the area. The primary element of CPTED implemented in Genesis Park was formal surveillance. A community policing program was designed to increase police presence in the neighborhood. Cooperation with the Charlotte Police Department assisted the housing organization in recruiting homebuyers and providing patrols during renovations. In addition to formal surveillance, Genesis Park implemented traffic barriers as means of access control. The barriers were placed throughout the neighborhood to discourage drug traffic from traveling through the area. The barriers also prevented cars from circling the block for drug sales. In addition, territoriality was established through the clean-up of empty lots, repairs of damaged streets and sidewalks, and landscaping. A new sign placed at the entrance of Genesis Park also promoted ownership and defined the space.

The CPTED elements were evaluated through data of reported crimes occurring in Genesis Park in 1984, 1989, 1993, and 1994. The number of overall offenses occurring in the

neighborhood had increased in 1989 but had declined in 1993 and 1994. From 1989 to 1994, violent crimes had decreased 78 percent, property crimes had decreased 39 percent, and overall crime had decreased 63 percent. While all other crimes experienced a decrease from 1989 to 1994, the number of reported rapes and commercial burglaries had increased. It should be noted, however, that the incidents of reported rapes and commercial burglaries were still relatively low (four rapes and one commercial burglary in 1994).

While the data were not initially examined, the authors mention a potential increase in crime rates during the first six months of 1995. A comparison of crime rates from January to June 1994 and 1995 suggested increases in the crime rates of strong-arm robbery, assault, residential burglary, commercial burglary, larceny, and vehicle theft. Overall, crime rates had increased 57 percent during the examined time period. Further examination of the crime rates in 1995 and the subsequent years would provide additional insight.

Lockwood Gardens

Lockwood Gardens, a public housing development in Oakland, California, suffered from high drug activity in addition to high rates of burglary and theft. The residents of this community were described as extremely poor and mostly single-parent families. Lockwood Gardens was comprised of one-story bungalows as two side-by-side units as well as two-story walkup apartments each with an individual entrance. Beginning in 1993 and lasting until 1995, the Oakland Housing Authority implemented several components of CPTED to the property. Several security guards were hired to patrol the property and provide formal surveillance. During the first seven months of the project, one guard was on-site at all times to monitor and stop every car coming through the entrance kiosk. Following the initial period of high-visibility guards, the kiosk at the entrance continued to be monitored but was no longer manned by guards

24 hours a day. Lighting around the property was improved as well to promote natural surveillance. Attractive fencing was installed around the perimeter of the property to define the space and limit unauthorized access. Gates within the complex were designed to restrict access through the installation of padlocks, keycards, and keypad systems. While the main entrance into Lockwood Gardens was not restricted, the new fencing and gates were designed to inhibit the movements of drug dealers in and out of the complex. New landscaping, community gardens, and building repairs improved the appearance of the property and promoted ownership among residents.

The reported crimes occurring at Lockwood Gardens were examined from 1991 to 1994. The number of robberies at the development decreased in 1993 and 1994 and accounted for a smaller percentage of total robberies in the surrounding area. Felony assaults and overall violent crimes also decreased from 1991-1994 while increases in these crimes were recorded in the surrounding area. Although implications of the effectiveness of CPTED are apparent with violent crimes, property crime rates did not experience such uniform improvements. Burglaries in Lockwood Gardens decreased from 1991 to 1993 but increased during 1994. While the burglaries for the entire surrounding area had increased significantly in 1993, there was a decrease in overall burglaries in 1994. Incidents of larceny as well as overall property crimes at Lockwood Gardens had decreased from 1991 to 1992, increased in 1993, and decreased again in 1994. Vehicle thefts at Lockwood Gardens declined steadily from 1991 to 1994 while a slight increase of vehicle thefts in the surrounding area had increased in 1992.

The data for violent crimes do support favorable results following the implementation of the CPTED program. Inconsistencies in the results of the examination of property crimes do not confirm a relationship between the CPTED program and reduction in crime rates. One limitation

in this study is the time period used for a comparison of crime rates. The CPTED changes at this apartment complex were implemented over a four-year period from 1991 to 1995. Examining the crime rates from 1991 to 1994 does not provide insight for the long term implications of CPTED. It does, however, provide data regarding the impact on crime rates directly prior and following the CPTED changes.

South Korea

Chang (2011) explored the relationship between burglaries and factors regarding building use and design. Six neighborhoods in a large metropolitan city in South Korea were examined for the study. These areas were comprised of structures designed for various uses including detached traditional houses, apartment buildings, retail stores, business facilities, and factories.

Secondary statistical data were obtained regarding incidents of burglaries in the six areas. In total, 714 burglaries occurring in various building types were examined in the study. It was discovered that 75.2 percent of the burglaries had occurred in single homes and commercial buildings. The burglary rate among apartments was significantly lower as it was 7.3 percent of the total burglaries. Additionally, the burglary rates of buildings were found to decrease as the number of levels of the structure increased. Next the various building designs were examined for their degree of visibility. It was discovered that 90 percent of all burglaries occurred in buildings that faced two or fewer streets.

Although this may suggest a relationship between poor visibility and higher burglary rates, it should be noted that this conflicts with another finding of Chang. This finding reports that 66 percent of burglaries occurred in buildings with adjacent alleys used for pedestrian and vehicle traffic. The buildings with adjacent alleys would be expected to provide increased traffic and therefore enhanced natural surveillance. It would be anticipated to find lower burglary rates

in these areas with high visibility. This finding is in significant conflict with Newman's (1972) natural surveillance strategy of CPTED.

Summary

The research presented in this literature review confirms inconsistencies regarding the relationship between CPTED and reductions of crime rates. Some studies found significant reductions in both violent and property crimes while other studies discovered little to no reduction in crime rates. The inability to confirm or deny the effectiveness of CPTED warrants further research. Although the majority of researchers have examined CPTED through an examination of the crime rates prior to and following the changes, a new methodology has been employed in the present study. It is beneficial to examine the CPTED elements already present at different environmental settings to be used for comparison with their respective crime rates.

Chapter 3

METHOD

A review of the literature for prior CPTED implementation programs reveals inconsistent findings regarding the effectiveness of the theory. While the majority of the studies examined the crime rates of an environment prior to and following CPTED implementations, it is beneficial to employ a different methodology to examine this theory.

This research study explored the physical elements of CPTED present on the properties of three apartment complexes in a large western city. The presence and absence of the CPTED variables were compared to the crime rates for each complex. Comparative analysis was used to examine the influence of CPTED elements on the number of reported crime incidents. The data have been de-identified to preserve confidentiality.

Research Design

This case-oriented study employed both qualitative and quantitative methods. Observational qualitative data was obtained through an examination of the CPTED variables present at each apartment complex. Secondary quantitative data comprised of the reported crime incidents at each apartment complex were gathered. Consistent with the definition provided by Babbie (2010), this study is cross-sectional as it is based upon observations made at one point in time.

A comparative research design has been applied to compare the CPTED variables present at each of the apartment complexes and their crime rates to the CPTED variables and crime rates of the other apartment complexes. Mauch and Park (2003) suggest that a comparative methodology can be used to examine the similarities and differences among two or more existing

situations. A comparative research design is also appropriate for confirming, challenging, and qualifying an existing theory (Gray, Williamson, Karp, & Dalphin, 2007).

Procedures

Unobtrusive field observations were used to examine the physical CPTED elements of each apartment complex. Babbie (2010) proposes that field research can be used to gain a deeper understanding of research topics that defy simple quantification. Each apartment complex was visited during both daytime and nighttime hours. Although most of the CPTED variables were visible during the daylight, it was also necessary to observe the effectiveness of lighting during nighttime hours.

Secondary quantitative data were collected to obtain the reported criminal incidents for each of the identified apartment complexes. The online crime mapping system, *CrimeReports.com*, was used to identify the reported crimes for the apartment complexes for a specific time period.

Sample

This study included three apartment complexes were included in study. All of the selected apartment complexes are within a large western city. The residents of this city are estimated to be 53.7 percent Caucasian, 33.1 percent Hispanic, five percent Asian, two percent African American, 1.3 percent American Indian, and 4.9 percent other or combined races (U.S. Census Bureau, 2012). From 2006-2010, the annual median household income was estimated to be \$52,971 (U.S. Census Bureau, 2012).

Purposive sampling was used to locate the three apartment complexes. Babbie (2010) suggests that purposive sampling is useful in selecting a sample from a population with specific elements for the purpose of the study. The selected apartment complexes share two specific

elements. First, the complexes are all located in well-established and inhabited areas of this city. Second, the selected complexes also advertise comparable rental rates which may assist in reducing possible influences from varying socio-economic variables. The selected apartment complexes are:

Complex A

Complex A is located in the easternmost section of the city. The property is situated at the intersection of a highly commuted street traveling through the metropolitan region. This area consists of mostly commercial buildings with other housing complexes and a large park located nearby. One side of the complex shares a border with a neighboring apartment complex. This complex is composed of 54 two-level buildings containing 486 individual rental units.

Complex B

Complex B is located at the southeastern boundary of the city. The complex entrance is accessible from a busy road but the apartment buildings are located further from the street. The property is surrounded with single-family detached residences and commercial buildings. There are 32 two-level buildings containing 304 individual rental units.

Complex C

Complex C is situated in the central portion of the city. This area consists of commercial buildings, apartment complexes, and single-family detached residences. One side of the complex borders a strip mall and several restaurants. There are 14 two-level buildings with a total of 172 individual rental units.

Instrumentation

Multiple elements of CPTED were observed during site visits of each apartment complex. Observations for each complex were recorded using a CPTED Assessment Form (see

Appendix A). This assessment form was based in part from the Apartments and Public Housing CPTED Assessment Form provided by Crowe (2000).

Incidents of reported crime were obtained using the online crime mapping service, *CrimeReports.com*. The address for each of the apartment complexes was entered into the mapping system. The specified types of crime were included in the search for the five months prior. A research log was be created using Microsoft Office Excel to document the crime incidents for each apartment complex and was separated monthly.

Data Collection

Field observations were used to examine the physical CPTED elements of each apartment complex. Each apartment complex was examined for the following four strategies of CPTED: territoriality, access control, surveillance, and activity support. Each strategy was comprised of several variables for consideration during field observations. Measurements of territoriality were based upon observations of the following variables: landscaping, property maintenance, and well-defined spaces. Access control was measured through examinations of fencing, entrances, exits, and security mechanisms. Measurement of natural surveillance required examinations of lighting, complex layout, building design, and areas of vulnerability. In addition, activity support was measured through observations of community activities and designated areas for resident gatherings.

CrimeReports.com was used to gather data regarding the reported crimes for each apartment complex. The following types of violent crimes were included for analysis: homicide, sexual offense, robbery, and assault. Property crimes included for analysis were residential burglary, vehicle burglary, theft of vehicle, theft (non-vehicle), and vandalism. The incidents of crime occurring during February 2012 to June 2012 were recorded and separated monthly.

Data Analysis

Following the collection of the secondary quantitative data, tables were created to demonstrate the number of criminal incidents recorded at each apartment complex. The tables were used to separate the criminal incidents by crime type and month. The use of tables assists in the presentation of a large amount of information in a more comprehensible and efficient manner (American Psychological Association, 2010).

The observed variables of CPTED were assessed for their influence on the reduction of crime rates. Through an examination of the collected data, it was determined if a specific CPTED variable or the presence of several CPTED variables suggested a reduction in crime rates. An evaluation of the variables and an interpretation of their impact on crime rates were used to determine the implications of CPTED.

The small sample size in this study prevents the establishment of correlation. Case-oriented studies can experience difficulty in gaining confidence in generalizing the findings. While this certainly is a limitation, a small sample size provides a greater understanding of the CPTED variables and its implications for reducing crime rates. Ragin (2000) suggests that the case-oriented strategy addresses a small number of cases in an in-depth manner while interpreting each case as a whole. Additionally, in-depth research is often limited to small sample sizes to yield a more thorough understanding of each case (Ragin, 2000). Although correlation cannot be established, the present study can suggest future research.

Summary

The methods described were used to provide an in-depth examination of the CPTED variables present at each apartment complex. The impact of the presence of these variables was examined through an assessment of the crime rates at each location. Employing a comparative

approach was used to thoroughly examine, compare, and interpret the impact of the CPTED variables in reducing crime rates.

Chapter 4

RESULTS

A comparative research design has been applied to compare the CPTED variables present at three apartment complexes and their crime rates. First, an examination of territoriality, access control, natural surveillance, and activity support explored the variables of CPTED present at each of the apartment complexes. Second, a review of the reported crime incidents for each complex was used to examine the implications for CPTED in reducing crime rates.

Elements of CPTED

An assessment of each apartment complex reveals elements consistent and inconsistent of the CPTED theory. The building design and layout of Complex A is most consistent with CPTED principles. Complex B also possesses some elements of CPTED while the building design of Complex C is the least consistent with CPTED principles.

Complex A

Territoriality

The overall site design of Complex A provides several elements of territoriality. Complex A uses multiple signs to define spaces within the property. The entrance into the apartment complex is labeled with a large, attractive sign to define entry into the property. Resident areas including the laundry facilities, mailroom, and outdoor play spaces are labeled with large signs that help to clarify their purpose. Signs located on the apartment buildings clearly designate their respective building numbers.

In addition to the signs, fencing is also used to define the territory belonging to Complex A. The apartment complex is entirely enclosed with tall fencing that provides a clear definition of the property's boundaries. While the fencing successfully defines the space, the type of

fencing used around the complex varies. Attractive metal railed fencing with brick pillars is located on one side of the complex. In contrast, unattractive wooden slate fencing is used for the remaining boundaries. The use of mismatched fencing does little to promote feelings of pride and ownership within the complex.

While the fencing does not contribute to feelings of ownership, the maintenance of the property does help to promote these feelings among residents. The buildings' exteriors appear well maintained, clean, and recently repainted. Landscaping also appears maintained and green; however, could be described as average in quality with limited effort overall.

Access Control

In addition to providing territoriality, the fencing at Complex A assists with access control on the property. Fencing surrounds the entire property and mostly inhibits unauthorized access into the complex. Unauthorized access into the property can be gained through a fence shared with the neighboring apartment complex. The space between the two complexes is divided with a locked gate preventing vehicle access. This gate, however, does provide enough space for unrestricted pedestrian access.

Although pedestrian access is not entirely controlled, vehicle access into the property is restricted. The only vehicle entrance into the facility is secured with a gate. This gate is open to all residents and visitors during the daytime hours. An employee of Complex A advised this gate is secured nightly at 8 p.m. Residents are required to input a key code to gain entry into the complex after the gate has been secured. It should be noted, however, this gate was not secured during a nighttime site visit occurring at approximately 10 p.m. In addition to the entrance, two exits out of the complex are also secured with gates during evening hours and open outward based upon sensory of a vehicle.

Additionally, resident assigned keycards provide access to on-site facilities including the swimming pool, fitness center, and laundry area. This method of access control prevents unauthorized visitors from using the facilities for illegitimate behavior.

Access control for vehicles parked at Complex A is limited. Residents are assigned parking in covered spaces but any person inside the complex could easily access the vehicles. The parking stalls surround the buildings and are also along the inside perimeter of the property.

Natural Surveillance

The building design provides opportunities for natural surveillance among residents. Ground-level apartments are equipped with patios while second-level apartments have balconies. The majority of these resident outdoor spaces overlook either the parking lot or grassy community areas in the complex. Residents can easily monitor the activity outside their building from their private outdoor space. While the balconies are fenced with metal rails, the patios are fenced with solid wood approximately three feet high. The fencing used on the patios may obstruct the residents' view and therefore interfere with their ability to engage in natural surveillance.

In addition to the resident outdoor space, the design of the building stairwells also provides opportunities for natural surveillance. The stairwells leading to the second level of the buildings are enclosed on the sides but do allow for visibility from the street or sidewalk. The upper portions of the stairwells are more difficult to observe due to the enclosure. The stairwells are equipped with bright lighting on both the upper and lower levels. The lighting effectively illuminates the stairwells during the evening hours and provides opportunities for natural surveillance.

In addition to the stairwell lighting, each apartment building is equipped with several bright lights mounted on the exterior. The lights provide sufficient illumination for the areas immediately surrounding the buildings. Additional lights located under the covered parking stalls provide enhanced visibility of the vehicles. Although the apartment buildings and parking stalls are well lit, there are no street or pole lights present on the property. Some of the walkways between buildings suffer from poor visibility due to inadequate lighting.

Fencing inside the apartment complex also promotes natural surveillance in addition to territoriality and access control. Although unattractive, chain link fencing surrounds the playground, dog park, and the basketball court. This transparent fencing encourages natural surveillance in these areas among residents. Residents who visit these facilities can be observed from several nearby balconies and patios.

Although the majority of the grounds are well maintained, there are some overgrown bushes near the apartment buildings, playground, and basketball court. Overgrown landscaping may provide potential hiding spots for intruders as well as interfere with the natural surveillance from residents.

Activity Support

Complex A provides several opportunities for resident gatherings and activities. A fitness center, swimming pool, water park, dog park, playgrounds, basketball court, and tennis courts are located on the property. These activities provide residents with the opportunity to gather for legitimate behavior in shared spaces. While some of these facilities are restricted by resident keycard access, the playgrounds, dog park, and basketball court are unrestricted during daytime hours and are vulnerable to intruders.

Complex B

Territoriality

Similar to Complex A, Complex B establishes territoriality through various signs. A sign located at the entrance of the apartment complex is visible from the main roadway. This sign is not illuminated during nighttime hours making it difficult to locate the complex in the dark. The leasing office and community center are clearly designated with signs. Each building is also labeled with its building number.

In addition to signs, fencing is used throughout Complex B to establish territoriality. The apartment complex is enclosed with tall fencing that provides a visible boundary between the nearby properties. Although the fencing assists with the definition of space, it is mismatched and overall unattractive. One side of the complex is enclosed with solid wood slate fencing while another side of the property is enclosed with chain-link fencing. The third side of the property is a combination of chain-link and solid wood slate fencing. This area of fencing has several damaged open spaces and is in need of maintenance. The unattractive and mismatched fencing is not likely to promote feelings of ownership among residents.

Without regard to the fencing, the remainder of the property is generally well landscaped and maintained. The entrance into the complex is decorated with flowers, rock gardens, and other greenery. The exterior of the leasing office is decorated with an extravagant archway and is also well landscaped. There are, however, some areas with large and overgrown bushes near the apartment buildings.

Access Control

There are few implementations of access control on the property of Complex B. Although the fences surrounding the property do inhibit outside access, the damaged openings allow for pedestrian access into the complex. There is one entrance into the complex that also

serves as the exit. Although a limited number of entrances and exits are beneficial in controlling access, this portion of the property is not gated and allows for unrestricted access into the property. Similar to Complex A, access control into resident facilities including the swimming pool, and fitness center is restricted through the use of resident assigned keycards.

Also similar to Complex A, access control for vehicles is limited at Complex B. Covered parking spaces are assigned to residents but access to the vehicles is entirely unrestricted. The parking stalls surround the apartment buildings throughout the property.

Natural Surveillance

The design of Complex B provides residents with opportunities for natural surveillance. Similar to Complex A, the residents' outdoor space consist of either patios or balconies. The upper level apartments are equipped with a railed balcony while lower level units have patios. Residents located on the balconies have good visibility of the parking and grassy areas due to the railed fencing. In contrast, the patios are fenced with solid wood fence approximately three feet tall. These solid fences surrounding the patios can inhibit a resident's view into the complex. This outdoor space does provide residents with the ability to monitor the activities outside their apartments but the ground-level apartments suffer from obscured visibility.

Also related to building design, the stairwells for each building provide opportunities for natural surveillance. The stairwells traveling to the second level are enclosed at the sides, but they are visible from the parking areas and sidewalks. The upper sections of the stairwells are not easily observed. Both the upper and lower levels of the stairwells are equipped with lighting; however, the lighting is relatively dim and does not effectively illuminate the stairwells during nighttime hours.

In addition to the stairwell lighting, light posts are present throughout the complex. These light posts are approximately eight feet tall with average to dim illumination. The light posts enhance visibility for the immediate surrounding areas but do not illuminate most areas of the apartment complex. The covered parking stalls are equipped with lighting similar to Complex A. This lighting is dim and overall inadequate in providing visibility to the parking areas.

Also similar to Complex A, fencing is used within the complex to define spaces, limit access, and promote natural surveillance. An attractive metal railed fence surround the swimming pool enables clear visibility into this area from the outside. Although not as attractive, chain link fencing also serves this purpose surrounding the basketball court. Residents who live near these facilities in the complex can easily monitor the swimming pool and basketball court.

Although the landscaping near the entrance and leasing office is well maintained, there are several overgrown bushes throughout the complex. Many bushes are located under apartment windows and entrances that can inhibit visibility and discourage opportunities for natural surveillance. The overgrown landscaping can also provide intruders with potential hiding spots.

Activity Support

Complex B provides its residents with several opportunities for activities and gatherings. A swimming pool, fitness center, tennis court, and barbeque areas are in the community space near the leasing office. A playground is located near the rear of the property but is not close to the other community activities. This placement of the playground also limits opportunities for

natural surveillance due to its decreased visibility. While some of these facilities are limited to residents through keycard access, other areas are unrestricted and can be vulnerable for intruders.

Complex C

Territoriality

In contrast to Complex A and Complex B, the design of Complex C does not effectively establish territoriality using signs or fencing. There are very few signs posted that define the spaces of Complex C. The limited signs designating the property as 'Complex C' are near the poorly positioned leasing office. The leasing office is not easily visible even from the internal roadways of the complex. Other areas including the mailboxes, swimming pool, and laundry facilities are not clearly identified or marked. Signs posted on the apartment buildings do provide the building numbers but are difficult to read due to their position high on the buildings. The color and font used on the signs also make them difficult to read.

A lack of fencing around the perimeter of Complex C also contributes to the poorly defined spaces. One side of the complex is open to a busy street with no barriers other than the sidewalk. Two other boundaries of the complex are identified with a combination of mismatched chain-link and wood slate fences. A chain-link fence separates the fourth side of the complex from the rear of a strip mall and several restaurants. An intentional gap enables pedestrian access into the complex from this commercial area. This inadequate fencing present on the property enables unrestricted vehicle and pedestrian traffic into and out of the complex. The lack of structured borders of Complex C does not clearly define the property or promote feelings of ownership among its residents.

Also related to residents' feelings of ownership, the landscaping of the apartment complex is minimal. Although there are several grassy areas around the property, there is no

visible effort for flowers, bushes, or other types of landscaping. The buildings appear to be maintained with average signs of wear on the exteriors.

Access Control

In addition to the lack of territoriality elements present at Complex C, there are also very few implementations designed to control access. The apartment complex is entirely unrestricting to vehicle and pedestrian traffic. The opening in the fence on one side allows for unrestricted pedestrian traffic from the commercial area. Although there are several ways to enter the complex, there are no defined entrances or exits. The lack of access control into the complex provides intruders with ample opportunities to gain entry.

Similar to the layout of parking at Complex A and Complex B, access control for vehicles is limited. Residents are assigned covered parking spaces inside the complex; however, access to the vehicles is completely unrestricted to other residents and outsiders. The parking stalls are located around the perimeters of the apartment buildings.

Natural Surveillance

The design and layout of the apartment buildings provide limited opportunities for natural surveillance. The 'motel-style' buildings do not provide outdoor space for each resident at the front side of the building. The outdoor space for each apartment is at the rear of the buildings with views of the grassy community space. The location of the balconies and patios for each apartment does promote natural surveillance of the shared grassy areas. It does not, however, enable natural surveillance of the parking areas at the front side of each building.

Also related to building design, the stairwells for the buildings significantly interfere with natural surveillance. The stairwells are entirely enclosed and cannot be viewed from the sidewalk or parking area. This design interferes with the visibility in this area as an observer

would need to be directly at the stairwell to view any activity. Visibility is slightly improved during nighttime hours from lights located at both the upper and lower levels. This style of stairwell interferes significantly with visual accessibility as well as opportunities for natural surveillance among residents.

Other lighting on the property includes tall street lights in the parking areas. The street lights are relatively dim, poorly positioned, and provide little illumination to the large parking areas. In contrast to both Complex A and Complex B, the covered parking stalls are not equipped with additional lighting. Overall, the lighting is generally insufficient during the nighttime hours at Complex C.

Limited landscaping does not interfere significantly with opportunities for natural surveillance. The low ground cover present throughout the complex does not inhibit visibility. There are some overgrown bushes around the property that could provide potential hiding places for intruders.

Finally, a secluded playground located on the perimeter of the complex does not encourage natural surveillance. The playground is only visible from a few patios and balconies of the nearby apartment buildings. The secluded nature of this location does not allow the majority of the residents to observe this particular area during their normal activities.

Activity Support

Unlike Complex A and Complex B, Complex C does not provide many opportunities for community activities and resident gatherings. Complex C features a swimming pool located near the leasing office in the center of the property. As previously mentioned, the playground is secluded as it is positioned at the far end of the complex.

Reported Crime Incidents

An examination of the reported crime rates were conducted for each apartment complex. During the five month period, Complex A had experienced both the highest combined number of violent and property crimes. Complex B suffered from the least combined number of both violent and property crimes. Complex C experienced the second highest number of incidents for both violent and property crimes. A comparison of the total incidents that occurred at each complex during the five month period displays this pattern (Table 1).

Table 1

Total Reported Crimes at the Apartment Complexes from February to June 2012

Crime Type	Complex A	Complex B	Complex C
Violent Crimes	9	3	7
Homicide	0	0	0
Sex Offense	0	0	0
Robbery	1	0	1
Assault	8	3	6
Property Crimes	28	15	19
Residential Burglary	3	1	4
Vehicle Burglary	10	1	6
Vehicle Theft	2	1	2
Theft (non-vehicle)	10	7	3
Vandalism	3	5	4

Complex A

Complex A experienced the greatest number of crimes from February to June 2012 (Table 2, Table 3). The number of combined violent crimes at this complex was slightly higher than the number of violent crimes at Complex C and three times the number of violent crimes at

Complex B. Although there were no reported homicides or sex offenses at Complex A, one robbery and eight assaults had occurred over the five months. The number of assaults remained consistent each month with one or two reported incidents.

In addition to violent crimes, Complex A experienced the greatest number of combined property crimes. There were more reported vehicle burglaries and thefts (non-vehicle) at Complex A than reported at both Complex B and Complex C. Other than the vehicle burglaries and thefts (non-vehicle), either Complex B or Complex C experienced more incidents of the remaining property crimes.

The greatest number of reported crimes occurred in June; however, the number of reported crimes in March, April and May were slightly lower. The least number of crimes occurred in February, which was significantly lower than the other months.

Table 2

Reported Crimes at Complex A by Month in 2012

Crime Type	February	March	April	May	June
Violent Crimes					
Homicide	0	0	0	0	0
Sex Offense	0	0	0	0	0
Robbery	0	0	1	0	0
Assault	1	2	2	1	2
Property Crimes					
Residential Burglary	1	0	1	1	0
Vehicle Burglary	0	3	0	4	3
Vehicle Theft	0	0	0	0	2
Theft (non-vehicle)	1	3	2	1	3
Vandalism	0	1	1	1	0
Monthly Totals	3	9	7	8	10

Table 3

Total Reported Crimes at Complex A from February to June 2012

Crime Type	Total
Violent Crimes	9
Homicide	0
Sex Offense	0
Robbery	1
Assault	8
Property Crimes	28
Residential Burglary	3
Vehicle Burglary	10
Vehicle Theft	2
Theft (non-vehicle)	10
Vandalism	3

Complex B

The least number of combined violent and property crimes occurred at Complex B from February to June 2012 (Table 4, Table 5). This apartment complex experienced few incidents of violent crimes relative to the other two apartment complexes. There were no reported homicides or sex offenses during the examined time period. Additionally, there were no reported incidents of robbery while both Complex A and Complex C experienced one robbery incident each. Three assaults occurred at Complex B but are lower than the eight recorded incidents at Complex A and six recorded incidents at Complex C.

In addition to having the lowest number of recorded violent crimes, Complex B also experienced the least number of overall property crimes. Residential burglary, vehicle burglary, and vehicle theft were very infrequent at this complex with one recorded incident each during the five month time period. Complex B experienced more thefts (non-vehicle) than Complex C but

less than Complex A. Complex B experienced slightly more vandalism incidents than both Complex A and Complex C.

The number of total crimes reported remained steady from March to June with four or five reported incidents. Similar to Complex A, the least number of crime occurred in February with only one reported incident.

Table 4

Reported Crimes at Complex B by Month in 2012

Crime Type	February	March	April	May	June
Violent Crimes					
Homicide	0	0	0	0	0
Sex Offense	0	0	0	0	0
Robbery	0	0	0	0	0
Assault	0	2	0	1	0
Property Crimes					
Residential Burglary	0	0	0	0	1
Vehicle Burglary	0	1	0	0	0
Vehicle Theft	0	0	1	0	0
Theft (non-vehicle)	0	0	2	3	2
Vandalism	1	1	1	0	2
Monthly Totals	1	4	4	4	5

Table 5

Total Reported Crimes at Complex B from February to June 2012

Crime Type	Total
Violent Crimes	3
Homicide	0
Sex Offense	0
Robbery	0
Assault	3
Property Crimes	15
Residential Burglary	1
Vehicle Burglary	1
Vehicle Theft	1
Theft (non-vehicle)	7
Vandalism	5

Complex C

Complex C experienced the second highest number of incidents for both combined violent and combined property crimes from February to June 2012 (Table 6, Table 7). The number of total violent crimes at Complex C was only slightly lower than the number of incidents at Complex A. There were no reported homicides or sex offenses at Complex C during the five month time period. One robbery had occurred at Complex C which is equivalent to the one reported robbery at Complex A. Six assaults were recorded at Complex C with one to two reported monthly from February to May with no reported assaults in June.

Complex C also experienced the second highest number of total property crimes. There were more reported incidents of residential burglary at Complex C than at Complex A or

Complex B. Complex C experienced the least number of thefts (non-vehicle) than the other two apartment complexes with only three reported incidents. Regarding vehicle burglaries, Complex C had experienced six total incidents which fell between the numbers recorded at Complex A and Complex B. For the remaining property crimes, Complex C experience similar crime rates to Complex A.

Complex C experienced the greatest number of total crimes during May. A high number of crime incidents were also recorded in February, which is very dissimilar to the low incidents reported at both Complex A and Complex B during this month. Complex C experienced the least number of crimes in June with only two recorded incidents. Again, this is opposite of the higher crime rates recorded by Complex A and Complex B for the month of June.

Table 6

Reported Crimes at Complex C by Month in 2012

Crime Type	February	March	April	May	June
Violent Crimes					
Homicide	0	0	0	0	0
Sex Offense	0	0	0	0	0
Robbery	0	0	0	0	1
Assault	2	1	2	1	0
Property Crimes					
Residential Burglary	1	0	1	2	0
Vehicle Burglary	3	2	1	0	0
Vehicle Theft	0	0	0	1	1
Theft (non-vehicle)	0	1	0	2	0
Vandalism	1	0	1	2	0
Monthly Totals	7	4	5	8	2

Table 7

Total Reported Crimes at Complex C from February to June 2012

Crime Type	Total
Violent Crimes	7
Homicide	0
Sex Offense	0
Robbery	1
Assault	6
Property Crimes	19
Residential Burglary	4
Vehicle Burglary	6
Vehicle Theft	2
Theft (non-vehicle)	3
Vandalism	4

Summary

This study employed a comparative analysis to examine the CPTED variables present at three apartment complexes and their crime rates for comparison to the CPTED variables and crime rates of the other apartment complexes. The building design and layout for each apartment complex was examined for consistency with CPTED principles. The number of violent and property crime incidents were obtained for each complex for a five month time period. A comparison of the apartment complexes and their crime rates was conducted to explore the implications of CPTED.

The building design and layout of Complex A is most consistent with the principles of CPTED. Complex A utilizes several elements of territoriality, access control, natural

surveillance, and activity support. Recorded incidents for both violent and property crimes were the highest at Complex A during the five month period. Complex B also displayed some elements of CPTED; however, not to the extent of Complex A. Various elements were used to enhance the building design of Complex B with additional modifications necessary for greater consistency with CPTED. Complex B had experienced the least number of both violent and property crimes from February to June 2012. The design of Complex C was the least consistent with CPTED principles. Very few elements of CPTED were present throughout the complex property. Complex C experienced the second highest numbers of violent and property crimes during the five month time period.

A comparative analysis approach was used to discover that the studied apartment complexes employed various degrees of the CPTED principles. The apartment complex with a building design most consistent with CPTED did not experience the lowest crime rates of the examined complexes. Additionally, the complex with a building design least consistent with CPTED did not experience the highest crime rates. These findings are not suggestive of lower crime rates due to the presence of CPTED elements.

Chapter 5

DISCUSSION

Several previous studies have examined the implications for CPTED in reducing crime rates. The findings of the research are generally inconsistent as some programs experience reductions in crime rates (Carter, Carter, & Dannenberg, 2003; Feins, Epstein, & Widom, 1997; Gardiner, 1978; Newman, 1996; Tseng, Duane, & Hadiprino, 2004) while other programs experience little to no change in crime rates (Chang, 2011; Feins, Epstein, & Widom, 1997). The inconsistent findings of CPTED programs have warranted additional study in this area. The traditional methodology employed in CPTED studies has been based upon a comparison of crime rates of an environment prior to and following the implementation of a CPTED program. Because of the importance of examining crime prevention programs, this research aimed to further examine the CPTED theory. The present study employed a different methodology by comparing the CPTED elements present at three environments and comparing their respective crime rates.

According to the CPTED theory, an environment with CPTED physical elements would experience lower crime rates than an environment with fewer elements of CPTED. From this study it has been determined that an apartment complex design consistent with CPTED principles does not experience lower crime rates than an apartment complex design with limited CPTED elements. This finding is in direct conflict with the basis of environmental criminology and the CPTED theory developed by Jeffery (1969), Newman (1972), Crowe (2000), and Cozens (2002). An examination of the CPTED elements present at each examined apartment complex and their respective crime rates supports this conclusion.

Implications of CPTED

Complex A

The physical design and layout of Complex A is the most consistent with the principles of CPTED. Considering the CPTED theory, it is unexpected that this complex suffers from the highest number of both violent and property crimes. The design of Complex A is overall very consistent with the four examined CPTED principles.

Uniform with the concept from Newman (1972), elements of territoriality are established through various signs, perimeter fencing, and maintenance of the complex grounds. Feins, Epstein, and Widom (1997) implemented similar elements of territoriality including perimeter fencing and building maintenance in the Castle Square Apartment complex. In conflict with the findings of Complex A, these researchers discovered a nearly 50 percent decline in crime rates. The impact of territoriality at Complex A may be limited due to the mismatched fencing and unattractive landscaping.

Additionally, Complex A appears to effectively establish access control throughout the property. Limited entrances and exits, secured gates, and resident keycards assist in limiting access in the complex. Feins, Epstein, and Widom (1997) also discovered increasing crime rates following the implementation of similar components of access control by means of traffic barriers and gates in both Genesis Park and Lockwood Gardens. Regarding Complex A, it should be noted that the unsecured entrance gates and open fencing allowing unrestricted vehicle and predestination access may have provided intruders with opportunities to enter the property.

In addition to territoriality and access control, the layout of Complex A provides residents with ample opportunities to conduct natural surveillance. Complex A is the most illuminated and well-lit apartment complex examined in the study. The bright lights under the parking stalls provide the most illumination on the vehicles during nighttime hours. Therefore, it is unexpected

that Complex A experienced the greatest number of vehicle burglaries of the three apartment complexes. This finding is in conflict with the study of Ohio State University parking garage by Tseng, Duane, and Hadipriono (2004). After the implementation of various CPTED elements, including bright lighting, the researchers found that crime had decreased by more than half. The lack of street lights in the parking areas of Complex A may interfere with residents' ability to engage in natural surveillance during nighttime hours.

Finally, this apartment complex implemented several elements of activity support and provides multiple areas for its residents to gather and engage in legitimate behavior. According to Cozens (2002), resident areas can discourage criminal activities and promote community involvement. Although Complex A provides a variety of opportunities for legitimate activities among residents, the high number of reported crimes in this complex is in conflict with the concept of Cozens (2002). Additionally, this finding is also in conflict with Newman's (1996) study of Clason Point. Following the implementation of several community areas designed for specific age groups in the complex, Newman (1996) discovered the crime rate had decreased more than 50 percent. Although there are several opportunities for community gatherings at Complex A, the high crime rates in this complex display the ineffectiveness of activity support in this case.

The overall physical design of Complex A is the most consistent with the CPTED theory among the examined apartment complexes. The complex establishes elements of territoriality, access control, natural surveillance, and activity support according the guidelines of Newman (1972), Crowe (2000), and Cozens (2002). The high number of reported criminal incidents that occurred at Complex A does not support the effectiveness of CPTED.

Complex B

Although not to the extent of Complex A, Complex B did implement elements consistent with CPTED. Because the physical design of Complex B was not the apartment complex with the most CPTED elements, it is unexpected that this complex experienced the lowest reported crimes of the sample. The design of Complex B does establish some degree of territoriality, access control, natural surveillance, and activity support.

Similar to Complex A, territoriality is established with signs, perimeter fencing, and landscaping. These elements are consistent with Newman's (1972) concept of territoriality. The impact of territoriality may have been limited at Complex B due to the poor condition of the fences. The fencing is described to be very unattractive, mismatched, and has several damaged openings. The fencing at Complex B is the least maintained of all the examined apartment complexes. Because of the poor fencing surrounding the property, the low number of reported crime rates at this complex is unexpected.

Next there were limited elements of access control implemented at Complex B. The single entrance and exit for the property does provide some access control; however, this area is completely unrestricted to all vehicle and pedestrian traffic. The damaged openings in the fence also invite unauthorized entrance into the property. The unrestricted access into the complex is in conflict with Crowe's (2000) concept of access control. According to Crowe (2000), access control decreases opportunity for criminal activity by denying access to a potential crime target. In contrast, the design and layout of Complex B does little to deny access into the property. Again, the low number of reported crimes at this complex is unexpected due to the limited establishment of access control.

In addition to limited elements of territoriality and access control, there are a few opportunities for natural surveillance at Complex B. Although outdoor spaces and transparent

fencing provides residents with opportunities to engage in natural surveillance, there are also some elements in conflict with this principle. Overall, the lighting at Complex B was moderate with some dimly lit areas. Lighting present in the stairwells, walkways, and covered parking stalls provided limited visibility during nighttime hours. Additionally, overgrown landscaping near the apartment buildings can interfere with visibility and provide intruders with hiding spots. The limited lighting and overgrown landscaping is in direct conflict with Newman's (1972) concept of natural surveillance. Newman (1972) mentioned that both effective lighting and landscaping can enhance visibility and create a secure environment. The limited establishment of natural surveillance would suggest higher crime rates at Complex B; however, this complex experiences the lowest crime rates of the sample.

Finally, activity support is well established through various activities and gathering places provided to residents. Newman (1996), Feins, Epstein, and Widom (1997) also implemented similar methods of activity support in their studies. The crime rates in both studies had declined significantly following the CPTED implementations including activity support. With regard to the elements of activity support present at Complex B, the lower crime rates at this complex can be anticipated.

The design of Complex B is consistent with some of the elements of CPTED. Although the design of this complex is more consistent with CPTED than Complex C, it is less consistent than Complex A. Because of the limited elements established at Complex B, it would be expected that this complex experienced the median number of reported criminal incidents. In reality, Complex B experienced the lowest crime rates which would be inconsistent with the CPTED theory.

Complex C

In contrast to both Complex A and Complex B, the physical design of Complex C is significantly inconsistent with the principles of CPTED. Considering the CPTED theory, this apartment complex would be expected to suffer from the highest crime rates of the sample. An examination of the crime rates reveals that Complex C experiences the second highest number of reported crimes.

Very few elements of territoriality are present on the property of Complex C. The absence of signs at the entrance and resident areas on the property do not assist in promoting feelings of ownership. This is in contrast with the attractive and clear signs displayed at both Complex A and Complex B. In addition to limited signage, the fencing at Complex C does not establish a clear boundary of the property. It is difficult to discern the perimeter of the complex due to its proximity to nearby commercial buildings. The efforts in establishing territoriality at this property are in significant conflict with the concept provided by Newman (1972).

In addition to limited elements of territoriality, there are very few elements of access control present at Complex C. Undefined and unrestricted entrances and exits provide intruders with ample opportunities to enter the complex. The absence of proper fencing also enables intruders to flow freely into the property from the nearby busy street and strip mall. The lack of access control enables the complex to be completely unrestricting to pedestrian and vehicle traffic. Similar to Complex B, the design of Complex C is in conflict with Crowe's (2000) theory of access control. The absence of access control would suggest higher crime rates; however, this property experienced lower crime rates than Complex A.

Next there were few opportunities for natural surveillance at this complex. The 'motel-style' of the buildings provides limited outdoor space with limited views of the parking areas. The secluded playground is not easily visible from most of the complex or resident outdoor

spaces. The greatest conflict with Newman's (1972) natural surveillance concept at Complex C is the very limited lighting present on the property. The limited visibility in the stairwells, dim street lights, and lack of parking stall lighting provides residents with very few opportunities to engage in natural surveillance during nighttime hours. Because the parking area of Complex C is the most poorly illuminated apartment complex in the sample, it would be expected to suffer from high incidents of vehicle burglaries and vehicle thefts. Although these crimes did occur at Complex C, the reported incidents were less than the reported incidents at Complex A.

In addition to limited elements of territoriality, access control, and natural surveillance, there is limited activity support at Complex C. Opportunities for resident gatherings are restricted to the swimming pool and the secluded playground. Residents are not provided with many areas to engage in legitimate behavior. Conflicting with the description of Cozens (2002), the activity support at this complex does little to discourage criminal activities or promote community involvement.

The overall design of Complex C is very inconsistent with the CPTED principles established by Newman (1972), Crowe (2000), and Cozens (2002). This property has the fewest elements of CPTED of the examined apartment complexes. The highest number of crime incidents would be expected at this location; however, Complex C experienced overall lower crime rates than Complex A. The CPTED elements examined at this property and its crime rates does not support the effectiveness of CPTED.

Chapter Summary

Prior to this study, previous researchers had examined the crime rates prior to and following the implementation of CPTED elements in a particular environment. The present study employed a new methodology by examining the CPTED elements present at different

environmental settings to be used for comparison with their respective crime rates. Employing this methodology in the present study has provided additional information regarding the implications of CPTED.

Results from this study do not support the implications for CPTED in reducing crime rates in apartment settings. Inconsistent findings in prior research continue to warrant further examination of CPTED. The methodology employed in the present study may be used in future research to compare the CPTED elements found in specific environments and compare their crime rates. Future research should continue to examine apartment settings, other residential environments, commercial properties, and public areas. Additional research will continue to explore the principles of CPTED and gain a better understanding of its ability to reduce opportunities for criminal behavior.

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APPENDIX A

CPTED Assessment Form

Name of apartment complex:

Date reviewed:

1. Neighborhood

Residential:

Commercial/Retail:

Industrial:

Streets/Intersections:

2. Buildings

Building type:

Building layout:

Number of units:

Stairs:

Lighting:

Maintenance:

3. Units

Private space (balcony, patio):

Lighting:

Visual accessibility:

4. Grounds

Recreation:

Gardens:

Landscaping:

Access to nearby properties:

Fences:

Exits/Entrance:

Natural barriers:

Border definition:

Lighting:

Maintenance:

5. Interior Streets

Pattern:

Parking:

Proximity to units:

Access to public:

6. Security

Guards:

Key control:

7. Common Buildings

Office:

Recreation:

APPENDIX B

Tables

Table 1

Total Reported Crimes at the Apartment Complexes from February to June 2012

Table 2

Reported Crimes at Complex A by Month in 2012

Table 3

Total Reported Crimes at Complex A from February to June 2012

Table 4

Reported Crimes at Complex B by Month in 2012

Table 5

Total Reported Crimes at Complex B from February to June 2012

Table 6

Reported Crimes at Complex C by Month in 2012

Table 7

Total Reported Crimes at Complex C from February to June 2012