

CHAPTER 1

Introduction to Crime Prevention

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INTRODUCTION

On Sunday, October 4, 2009, the peaceful tranquility of Mont Vernon, New Hampshire, was shattered after police responded to an open 911 call with no one on the telephone line. Initial news reports indicated that 42-year-old Kimberly Cates had been murdered and her 11-year-old daughter severely injured during the course of an early morning home invasion. The mother and daughter had been attacked with a machete during a burglary-turned-murder. Tips immediately began to surface, leading the police to investigate four local youths: Steven Spader, Christopher Gribble, William Marks, and Quinn Glover. According to the police affidavit (State of New Hampshire, 2009), Gribble stabbed Jamie Cates in the right lung and then tried to stab her in the heart through her back. Steven Spader mortally wounded Kimberly Cates. The four assailants intended to kill both mother and daughter to eliminate witnesses to the crime.

Steven Spader was the first of the four individuals to stand trial for the murder. On his 19th birthday, Spader received a sentence of life in prison for the murder of Kimberly Cates. With media cameras capturing the moment, Spader asked his attorney if the jury would sing “Happy Birthday” to him (WMUR-TV, 2010). In a separate trial, Christopher Gribble received a life sentence following his unsuccessful attempt to use the insanity defense. As for the other defendants, Quinn Glover would be sentenced to 20–40 years in prison for burglary, burglary conspiracy, and robbery, and William Marks received a 30–60-year sentence for first-degree assault, burglary conspiracy, and murder conspiracy. Autumn Savoy, a fifth suspect subsequently arrested for hiding evidence and providing alibis for the other four, received a 5–12-year prison sentence and a suspended 3.5–7-year term after his release when he pled guilty to conspiracy to hinder apprehension and two counts of hindering apprehension (Associated Press, 2011).

The Mont Vernon murders shattered the tranquility of the local area. Residents unaccustomed to crime faced a range of emotions, from shock and fear to anger. Some communities experience crime, whether property, violent, or so-called victimless crimes, on a regular basis, and criminal activities and violence often follow a familiar pattern. According to the Federal Bureau of Investigation’s annual crime statistics for New Hampshire (Federal Bureau of Investigation, 2009a), Kimberly and Jamie Cates were the victims of Mont Vernon’s only two violent crimes in the entire year. Mont Vernon, a town of just over 2,400 people, is located in the safest state in the nation, according to the FBI’s Uniform Crime Reports.

COSTS OF CRIME

The costs of crime to society are staggering, despite the fact that the United States has experienced a substantial decline in the overall amount of crime since 1990. The FBI notes that from 2000 to 2009, the nation's violent crime rate dropped 15.2% (Federal Bureau of Investigation, 2009b) and declined 40% from 1990 to 2009 (Federal Bureau of Investigation, 2009c). Results from the 2009 National Crime Victimization Survey (NCVS) indicate that criminal victimization is at a historic low point since the inception of this victimization measurement survey (Truman & Rand, 2010). Results from the NCVS indicated specific declines of 39% from 2000 to 2009 for the rate of violent crime and a decline of 29% for the rate of property crime (see **Table 1-1**). Nevertheless, crime prevention remains a central issue for the criminal justice system as well as society as a whole. In 2009, the Uniform Crime Reports index of offenses (Federal Bureau of Investigation, 2009c) indicated that more than 1.3 million violent crimes and 9.3 million property crimes have been reported.

Although these decreases in crime might imply that the costs of criminal justice have decreased proportionately, such is not the case. Data from 2007 (Bureau of Justice Statistics, 2011) show

TABLE 1-1 Rates of Criminal Victimization and Percentage Change, by Type of Crime, Between 2000 and 2009

Type of Crime	Victimization Rates		Percentage Change
	2000	2009	2000–2009
Violent crime	27.9	17.1	–38.7*
Rape/sexual assault	1.2	0.5	–56.9*
Robbery	3.2	2.1	–34.9*
Assault	23.5	14.5	–38.3*
Aggravated	5.7	3.2	–43.1*
Simple	17.8	11.3	–36.8*
Personal theft	1.2	0.5	–56.6*
Property crime	178.1	127.4	–28.5*
Household burglary	31.8	25.6	–19.4*
Motor vehicle theft	8.6	6.0	–30.5*
Theft	137.7	95.7	–30.5*

Note. The total population age 12 or older was 226,804,610 in 2000 and 254,105,610 in 2009. The total number of households in 2000 was 108,352,960 and 122,327,660 in 2009. An asterisk (*) indicates that difference is significant at the 95%-confidence level. Victimization rates are per 1,000 persons age 12 or older for violent crime or per 1,000 households for property crime. Differences between the annual rates shown do not take into account changes that may have occurred during interim years. Percent change calculated on unrounded estimates. Violent crime excludes murder because the NCVS is based on interviews with victims and therefore cannot measure murder. Personal theft includes pocket picking, completed purse snatching, and attempted purse snatching.

Adapted from: Truman, J. L., & M. R. Rand, 2010. Criminal Victimization, 2009. Bureau of Justice Statistics, U.S. Department of Justice, p. 2. Retrieved from <http://bjs.ojp.usdoj.gov/content/pub/pdf/cv09.pdf>.

that the United States annually spent an estimated \$230 billion on criminal justice. This figure includes only costs associated with police, courts, and corrections; vast additional funds go toward homeland security. In addition to the costs of criminal justice at the federal, state, county, and local levels, there are costs borne by the victim, whether the victim is an individual or a business entity. Some monetary aspects of criminal victimization are more easily counted than others. For instance, Maguire (2003) notes the average loss in 2002 for a robbery was \$1,281, for a purse snatching, \$332, and for a bicycle theft, \$257. The costs of crime are both direct and indirect and include money spent on private security and loss prevention, alarm monitoring, medical costs, lost wages/lost work days, stolen property, increased security or target hardening measures, and increased product costs due to shoplifting and pilferage. Other costs include incarceration and those that are more difficult to quantify, such as the associated impact on prisoners' families and children, subsequent public assistance for those families, and even lost tax revenue that might have been generated had individuals been working instead of serving time.

Society bears the costs of crime and crime prevention in both the public and the private sectors. In fact, private security now accounts for more spending and more personnel than traditional public policing. The U.S. Bureau of Labor Statistics (2011) notes that there were approximately 884,000 persons employed as police or detectives in 2008, while private security employed 1.1 million individuals. This gap favoring private sector security is projected to increase even further. The Bureau of Labor Statistics notes that while the number of policing jobs is expected to increase 10% by 2018, private security jobs are expected to increase by 14% during the same period (U.S. Bureau of Labor Statistics, 2011). As these statistics suggest, crime prevention efforts benefit when private security and public law enforcement agencies collaborate. For instance, the Law Enforcement–Private Security Consortium (2009) emphasizes collaboration in the areas of homeland security, infrastructure protection, special event security, transportation security, and financial crime investigation. Collaboration in these areas provides both public and private sector crime prevention entities with additional resources and deeper knowledge of specific areas, such as power-generating facilities, manufacturing plants, and even schools. The consortium also notes specific examples of collaboration in which private security provides law enforcement with access to closed-circuit television capabilities, thereby expanding the resources available to law enforcement without forcing taxpayers to support the purchase, installation, and maintenance of such security tools.

THEORETICAL FOUNDATIONS OF CRIME PREVENTION

Several theoretical models, drawn from both the public health field and criminology, are directly applicable to the prevention of crime. By applying these theoretical models, researchers and policy makers can plan and implement intervention programs, that is, programs to prevent crime. Having a sound theoretical model helps researchers evaluate such programs and determine the impact of the intervention on the targeted problem. Farrington (2000) notes the recent trend of identifying key variables for delinquency prevention during the course of longitudinal studies that policy makers can then use when implementing delinquency prevention programs. Ideally, this connection would produce a synergy of policy implementation and delivery, which can then be tested empirically. Information from those tests can then help officials improve the intervention program.

Public Health Model

Until recently, criminal justice policy focused on reacting to criminal events. This traditional approach relied heavily on the police responding to calls for service or reports of suspected criminal activity. With this type of reactive policy approach in place, society can assess police effectiveness on the basis of number calls for service, reported crime rates, clearance rates, and similar measures. Recently, however, the criminal justice system has shifted its emphasis to the public health model, or the medical model. To illustrate the medical model, consider approaches to prevent individuals from suffering heart attacks. Would it be wise for society's main response to the dangers of heart attacks to be a solely reactive focus on advancing emergency room technology to respond to heart attack victims? Individuals would also benefit from proactive lifestyle changes to reduce their risk of heart trouble. Heart-healthy lifestyle changes may include diet, exercise, and smoking cessation (Farrington, 2000). In addition, individuals who are at increased risk of a heart attack may start a risk-mitigation regimen of medications as well as additional lifestyle modifications.

The public health model, when applied to criminal behavior, emphasizes three interrelated and coordinated approaches for reducing the both the incidence and seriousness of criminal behavior: primary prevention, secondary prevention, and tertiary prevention. Primary prevention seeks to strengthen *resiliency factors*, which are factors associated with avoiding criminal behavior, and to reduce *risk factors*, which are factors that increase an individual's propensity to engage in crime (Shader, 2003). Farrington (2000) notes that some may view protective factors and risk factors as opposite ends of a continuum for the same variable, but such a view is not accurate because some variables have a nonlinear relationship to delinquency. Farrington points out that statistical analysis has allowed researchers to compute an odds ratio to determine the relative impact of such factors on offending patterns. This calculation would be a critical tool for performing a cost-benefit analysis of various types of interventions. Armed with such information, communities can then implement interventions that target factors more selectively and also emphasize those interventions targeting factors with the greatest cost-savings potential.

Primary prevention typically focuses on proactive and preventative efforts well before the onset of crime. Primary prevention strategies in the area of juvenile delinquency include prenatal programs, parenting programs, and preschool programs with delinquency prevention potential (Regoli, Hewitt, & DeLisi, 2010). For example, prenatal programs focus resources on improving the physical well-being of the mother. These efforts seek to avoid or minimize negative factors for the baby such as low birthweight, neurological impairments, and exposure to environmental toxins associated with developmental and educational impairments. All of these negative factors are linked to poor school achievement, which, years down the road, could lead to a higher likelihood of involvement in delinquency.

Secondary prevention focuses on individuals and settings considered to be at an increased risk for continuation of delinquency. As Regoli, Hewitt, and DeLisi (2010) note, the focus of secondary prevention is to reduce the prevalence, seriousness, or duration of delinquent involvement. Secondary prevention programs target a narrower population than primary prevention programs. These individuals are at risk for offending, but have not engaged in serious, chronic delinquency. Farrington (2000) identified nine criminality risk factors for boys aged 8 to 10 in separate studies conducted in London and Pittsburgh 3 decades apart. The nine variables were "hyperactivity, poor concentration, low achievement, an antisocial father, large family size, low family income, a broken family, poor parental supervision, and parental disharmony" (p. 5). To counter these and similar risk factors, between 1995 and 1999 the Juvenile Mentoring Program (JUMP) funded 164 mentoring

programs serving approximately 7,500 youths (Novotney, Mertinko, Lange, & Kelly Baker, 2000). The average age for juveniles starting the program was 12, and about 75% of the boys served by the program had problems in school identified as behavioral issues, poor grades, or truancy.

Tertiary prevention seeks to prevent further crime and delinquency by those who are already under the control of the justice system. Rehabilitative efforts are the focus of tertiary crime prevention, and they address risk and protective factors as well as isolating individuals from dangerous situations through programs like boot camps, drug and alcohol treatment programs, and educational programs. Historically, programs such as Scared Straight targeted youths whom teachers, parents, and juvenile probation officers believed were likely to engage in more serious delinquency if not be diverted from their current life trajectory. The Scared Straight approach gained popularity after the release of *Scared Straight* (1978), a TV documentary narrated by Peter Falk that showcased a confrontational juvenile awareness program led by long-term adult prisoners at what was then Rahway State Prison in New Jersey. To deter youths from crime, the Scared Straight program delivered graphic information about life inside prison and employed verbal harassment, homosexual taunts, threatened violence, and not-so-subtle intimidation on the part of the adult prisoners. A study by Finckenaue, Gavin, Hovland, and Storvoll (1999) indicated that the youths who participated in Scared Straight had worse outcomes in terms of delinquency than did their counterparts in the control group. More recently, Klenowski, Bell, and Dodson (2010) examined the research on juvenile awareness programs, including Scared Straight and similar ones. They identified eight studies of sufficient rigor, based on the requirements of experimental designs (discussed below), to include in their analysis. They conclude that juvenile awareness programs are not effective in deterring juveniles from delinquency and crime. Research on the Rahway program specifically, as well as some other studies, indicates that youths who participate in the Scared Straight program have worse outcomes than their peers who do not attend the program. Klenowski, Bell, and Dodson note that these programs typically do not include a rehabilitation component, and others contend that one Scared Straight-style encounter may be insufficient to deter youths from crime.

Rational Choice Theory

The contemporary criminal justice system, which has defined laws to deter crime and sentencing guidelines to punish crime, operates on the principles of rational choice theory. Dating back to the late 18th century, the concept of rational choice suggests that all human decisions are based on calculated self-interest. Jeremy Bentham's *Introduction to the Principles of Morals and Legislation* (1781/1948) used the term utilitarianism to identify the concept. In Bentham's view, humans judge actions according to the amount of happiness produced and will act in ways to produce the greatest level of happiness for themselves. In the same way, rational choice theorists believe that individuals have free will and can choose to engage in either criminal or noncriminal behaviors. Rational choice theory thus leads into deterrence theory, or the idea that, when the personal costs of engaging in crime outweigh the expected gains, an individual will choose not to commit a crime; the threatened punishment has thus deterred the crime (Pratt, Cullen, Blevins, Daigle, & Madensen, 2006). In this view, society needs swift, certain, and severe sanctions for criminal behavior so that individuals will choose not to engage in crime. Proponents of this view note that deterrence offers a fairly straightforward solution to the problem of crime: increasing the likelihood of detecting crime and increasing the punishments associated with specific criminal behaviors. Deterrence comes in two forms: general and specific. General deterrence seeks to prevent crime among the general population by passing laws prohibiting various acts. Specific deterrence seeks to prevent those who

have already committed a crime from engaging in further criminal activity. In theory, those individuals would not commit another offense because they have experienced the unpleasant aspects of punishment. Deterrence theory has a commonsense appeal; most people find it reasonable because they themselves seek to avoid unpleasant and painful experiences. Pratt et al. (2006) contend that the focus of deterrence is at the individual level, specifically, an individual's perception of the likelihood that he or she, having committed a crime, will be apprehended and the sanction imposed.

Deterrence theory focuses heavily on the response by the formal legal and judicial system, and, as such, society does not gain the advantage of informal social control, shaming, and types of sanctioning that are not aspects of the legal or judicial system (Pratt et al., 2006). Some researchers contend that these informal controls have much more influence on the individual than do formal controls. The work of Braithwaite (1989) best illustrates the concept of reintegrative shaming. With this approach, society attempts to reintegrate the offender into the community rather than positioning such individuals to face what may amount to permanent outcast status.

Routine Activity Theory

In 1979, Cohen and Felson conceptualized routine activity theory, which is a relatively straightforward theoretical explanation for crime, although its significant utility lies in its application for crime prevention. The theory suggests that a crime is more likely to take place when three factors converge in time and place: a potential victim is present, a motivated or likely offender is also present, and capable guardians are absent. Simply stated, routine activity theory assumes a crime is more likely to take place when a motivated offender encounters a suitable target and no one is around to stop a criminal act. This theory has links to rational choice theory, since it presumes that offenders engage in a decision-making process (choosing whether to engage in crime) but in a very specific context. In routine activity theory, an individual's propensity to commit a crime remains, but what varies is the specific risk undertaken by committing the criminal act. The key component of the theory is the idea that crime can be controlled by manipulating the opportunity for crime. Opportunities for crime decrease with increasing supervision, and Felson (2002) notes that supervision can be performed either directly or indirectly. For instance, *place managers* are responsible for supervision in specific locations; examples of place managers include homeowners, teachers, bouncers, and police officers. *Handlers* provide additional supervision for those at risk of becoming an offender, while *guardians* provide supervision for potential victims; a mentor would be an example of both a handler and a guardian. With recourse to routine activity theory, one can gain a better understanding of how and why property crime and predatory violent crime vary in frequency depending on the time and place. In *Crime and Everyday Life*, Felson (2002) states that "settings vary moment to moment in their degree of temptation or control—the cues they emit—hence the degree of choice they provide. Constraints on individuals shift quickly as events unfold" (p. 41).

Environmental Criminology

Brantingham and Brantingham (1991) have elaborated an environmental theory of criminology. A fundamental starting point in their theoretical orientation is a focus on the role of space and place in the criminal event rather than on the motivations of particular offenders. They contend that patterns of criminality are a reflection of street networks, mass transit, business, and residential areas. Environmental criminology has its roots in efforts to map crime in France in the early 1800s, and most students of criminology are familiar with a study of the spatial distribution of crime by

Shaw and McKay (1969). Brantingham and Brantingham (1991) posit a number of propositions about crime and the physical environment. For example, they contend that motivated offenders use cues in the environment to compare potential victims in the physical setting to their template of a “good victim.” They also argue that criminal events usually occur a short distance from an offender’s home but that, with the exception of homicide, little crime occurs in the *immediate* vicinity of an offender’s home. Thus, there is a peak in offending as one moves away from the home, and then a decline as one moves farther away from the home; this peak area for offenses roughly corresponds with the perception of the highest risk of getting caught and the offender’s knowledge and familiarity with the area. A person’s noncriminal activities take place across a wider area, termed the *awareness space*, and an offender’s knowledge of that wider awareness space influences selection of an *action space*, where the offender considers the risk of apprehension to be. Brantingham and Brantingham contend that places connected to home, work, recreation, and other pursuits as well as the mode of transportation between locations (e.g., bus, subway, motor vehicle, or walking) influence the formation of an offender’s awareness space. The physical distribution of potential offenders, business/commercial establishments, recreational opportunities, and other entities will reflect differences in the overall distribution of crime in a city. The authors point out that older cities with a concentric zone pattern, akin to the concentric zone maps used by Shaw and McKay (1969), will have markedly different distributions of crime than cities with a more mosaic pattern of development (Brantingham & Brantingham, 1991). Fringe areas adjacent to urban centers may attempt to lure businesses with tax incentives, reduced land prices, and better access to highways, but routine activity theory suggests that the movement of work and recreation opportunities to the fringe areas of cities will result in an increase in crime in those areas.

Situational Crime Prevention

While deterrence theory still continues to have significant influence on criminal law and policy, several variants of rational choice theory have generated a great deal of attention among scholars and professionals in the area of crime prevention. One such variant is situational crime prevention, which applies rational choice theory tenets to very specific situations in which crime may occur. In effect, situational crime prevention efforts seek to increase the risks associated with specific criminal acts and/or to decrease the rewards associated with the offense (Clark, 1995). This type of crime prevention may emphasize increasing the effort required to commit the offense, increasing the risk of detection, reducing the gains associated with the crime, reducing the provocations that may escalate a course of action, and remove excuses for offending (Center for Problem-Oriented Policing, 2011).

These types of crime prevention efforts have been formalized by Crowe (1991) as principles of crime prevention through environmental design (CPTED). CPTED employs the interconnected strategies of natural access control, natural surveillance, and territorial reinforcement. These strategies seek to reduce opportunities for crime and to increase the risks of detection for offenders. CPTED thus seeks to effectively arrange the physical environment, whether it is a neighborhood, a park, or a building, such as a school, to simultaneously give legitimate users more efficient access to the space and to let potential offenders know that risks and rewards are not in their favor in the particular location. Rather than relying on mechanical restraints or equipment, CPTED seeks to take advantage of the designed layout. Crowe (1991, pp. 106–107) lists nine major CPTED strategies: (1) providing clear border definition of controlled space; (2) providing clearly marked transitional zones; (3) relocating gathering areas; (4) placing safe activities in unsafe locations; (5) placing unsafe

activities in safe locations; (6) redesignating the use of space to provide natural barriers; (7) improving the scheduled uses of space; (8) redesigning or revamping space to increase the perception of natural surveillance; and (9) overcoming distance and isolation.

To illustrate these strategic uses of CPTED, Crowe (1991) provides numerous recommendations for redesigning urban space, including fewer one-way streets, on-street rather than garage or ramp parking, and wider sidewalks. These alterations to urban space and design are intended to reduce the intensity of traffic flow, divert through traffic to other routes, provide more space for pedestrians, and give local merchants a sidewalk presence. Also relating to the manipulation of the physical environment to alter human behavior are the techniques known as *chunking* and *channeling* (Felson et al., 1996). Chunking is the division of a larger physical space into smaller areas, and channeling refers to directing the flow of individuals into specified pathways.

Crowe (1991) notes that CPTED can be used in very narrow applications, such as school restrooms. Traditionally, school architects placed restrooms in more remote areas of a building due to economic considerations and cultural sensitivity; restrooms were usually not located adjacent to more prime locations. Double-door trap designs, which create an enclosed vestibule between the exterior entry door and the interior entry door, were intended to isolate the sights, sounds, and smells of the restroom. The result was that unconventional users of the restroom space were rewarded with a location that was geographically and socially more isolated from other settings and where the extra door provided offenders with a warning interval. Conventional users might avoid the restrooms due to fear of the unconventional users' behavior and the desire to avoid unpleasant encounters. This situation would reinforce the unconventional users' territorial control over the space. Crowe advocates using a maze entry design for restrooms and placing them in more centralized locations.

Convenience stores offer their own set of CPTED challenges. According to Crowe (1991), the placement of the cashier station is a critical feature for loss prevention and robbery prevention. The cashier should have the ability to observe gas pumps, parking, and the approach to the store entrance and also have adequate lines of sight within the store. Access to the sides of the building should be limited to prevent undetected approaches to the store. For maximum visibility, windows should be unobstructed and not covered with advertisements or blocked by product displays.

The design and layout of communities and neighborhoods can have a profound impact on social problems and resident satisfaction. Poorly designed roadway systems and traffic flow may lead commuters to use residential streets to avoid congestion, thus funneling vehicles onto what should have been quiet, safe residential streets. In such cases, decorative barriers have been used with some degree of success to close through access to some residential streets. Traffic would thus be limited to residents of the area, and natural surveillance over public behavior, including children playing and vehicles in the area, would be increased as residents would have a clearer sense of who belonged in the area and who did not.

Situational crime prevention techniques can draw upon the concepts of familiarity with physical space, easy access, sense of ownership, and risk of detection, which constitute the core principles of *defensible space*, a concept often attributed to Oscar Newman (1996), who argues that defensible space relies on resident self-help and reinforcement of territorial boundaries. The defensible space concept arose from the failure of the Pruitt-Igoe housing project in St. Louis, Missouri. Constructed in the mid-1950s, the high-rise complex had more than 2,700 residential units. After it opened, conditions deteriorated rapidly, culminating in the demolition of the units 10 years later. The architects had designed the modernist complex to have ample public space between the high-rise buildings as well as common areas for laundry and recreation in each building. However, no

one took responsibility for the public areas, and, as a result, they became run down, littered, uninviting, and eventually unusable. Residents perceived fundamental differences between the private space in their own units and the public spaces. In Newman's analysis of the defensible space concept as applied in the Clason Point housing project in the Bronx, he states that "the smaller the number of families that share an area, the greater the felt responsibility for maintaining and securing it, and the easier it is for people to agree on mutually acceptable rules for using it" (Newman, 1996, p. 78). Alternatives exist for assigning space. Newman notes that fencing, landscaping, and hardscape can be used to allocate space to particular units. Space is more likely to be maintained when a clear sense of territoriality is maintained.

Another good example of defensible space is Newman's (1996) case study of the Five Oaks neighborhood in Dayton, Ohio. As Five Oaks began to decline, officials brought in Newman to consult on efforts to reclaim the neighborhood. Originally a stable neighborhood of owner-occupied housing, Five Oaks transitioned to an area dominated by rental units, unauthorized multifamily units, absentee landlords, declining home prices, and an overabundance of houses for sale. Rental unit vacancies were extensive, averaging between 10 and 29%. Some landlords were inclined to rent to drug dealers because they paid their rent and were not demanding upgrades to their units. As he began his consulting work, Newman noted the presence of social disorder as well, including drug sales and prostitution.

The situation called for a systemic response, and for his part Newman (1996) designed a system of mini-neighborhoods. In a series of community meetings, residents helped identify the mini-neighborhoods, which broke up a grid street design by creating numerous cul-de-sacs. The new neighborhood street patterns involved the use of ornamental gates with the appearance of wrought iron; these would be used to block roads. The gates created a street pattern similar to a tic-tac-toe square, with seven of the eight streets closed off with gates. Another design involved having one horizontal street with two vertical cross streets, with five of the six roadways closed off with gates. The only open road had a portal constructed to signify the start of the neighborhood. Some accommodations were made for emergency vehicles, snow removal, moving vans, and garbage collection. Garbage trucks, for instance, were too big to turn around at a gate because technically there was no cul-de-sac circle, and backing the trucks down the roads was deemed unsafe.

Newman's (1996) plan called for more than just gated neighborhoods. It also specified increased law enforcement efforts to apprehend street-level drug dealers. Another major focus of his plan was a coordinated program to encourage homeownership in the neighborhood. Homeowners, in theory, should have a greater stake in the mini-community and a personal identification with the neighborhood. Code enforcement was also used to provide additional incentive to landlords to bring their properties in line with building and safety codes. Newman notes a degree of success with the Five Oaks plan. Violence in the area decreased 50%, overall traffic flow was reduced by more than one-third, and two-thirds of the residents indicated that the neighborhood was a better place to live.

RESEARCH DESIGNS

Readers should have some familiarity with research methodologies used in subsequent chapters, so what follows is a brief introduction to important concepts, terms, and practices.

Crime prevention efforts involve social, political, legal, and economic choices. Implementing a program or an initiative requires the expenditure of resources and thus subjects individuals to

additional burdens. Ideally, the selection of particular crime prevention strategies should be based on a review of programs using objective evaluation measures. Objective evaluation adheres to the principles of the scientific method. Farrington (2000) notes that not all scientific research is of equal validity, due in part to the research design utilized. There are numerous examples of programs implemented that did not work as originally intended. Despite its popularity, the Drug Abuse Resistance Education program (Project DARE), with its earlier curriculum, suffered from fairly disappointing evaluation results (Rosenbaum & Hanson, 1998). Research noted that suburban youths who completed the program actually used more drugs and liked police officers less than the youths who did not participate in the program.

Experimental Designs

Experimental designs are some of the more rigorous methods of scientific inquiry because they allow researchers to make statements about cause-and-effect relationships; without experimental designs, scientists merely observe, making their statement of findings simply a description of what they observe. The classic experimental design consists of four major components: (1) independent and dependent variables, (2) experimental and control groups, (3) pretesting and posttesting, and (4) randomization or equivalence of the experimental and control group (Hagan, 2010). The independent variable is considered the causal agent, while the dependent variable is considered the outcome in the experimental design. In setting up an experimental design, the researcher controls or manipulates the independent variable to determine its effect, and the nature of its effect, if any, on the outcome—the dependent variable. For example, Clark (2002) provides a succinct set of recommendations to address shoplifting in retail stores. Measures such as strategic placement of mirrors, keeping expensive items in controlled-access locations, and moving products away from exits may lower the incidence of shoplifting. In a hypothetical study, those store design changes would be the independent variables, and a measure of product loss attributed to shoplifting would be the dependent variable.

The second major component of an experimental design consists of the experimental group, which is exposed to changes in the independent variable or stimulus, and the control group, which is not exposed to the changes in the stimulus. Without a control group, the research would not be able to determine whether changes in the dependent variable are the result of the manipulation of the independent variable or other factors. For instance, people may alter their behavior if they know they are being observed, which is a finding derived from the Hawthorne study. This study sought to examine factors that might increase worker productivity in a wiring room in a Western Electric assembly plant in Hawthorne, Illinois, in the 1920s. Researchers manipulated lighting levels, the timing of break periods, and other environmental factors, each resulting in increased worker performance. Eventually, the researchers determined that regardless of the stimulus intervention, productivity improved, ostensibly because workers liked the attention provided by the research. This finding spurred businesses to transition from scientific management to produce efficient workflows (a concept known as Taylorism) to the human relations model of management, which focuses on employee motivation and recognition.

For the third component of an experimental design, the pretest determines the nature of the dependent variable prior to exposure to or manipulation of the independent variable. After the introduction of the independent variable, or stimulus, the dependent variable is then measured again. Differences in the dependent variable would be attributed to the effect or influence of the independent variable, although some complicating factors, described more fully below, may come

into play. The pretest provides a baseline for the dependent variable. For example, a student may score very well on an exam in an introductory criminal justice course. The exam grade provides only a baseline measure; it does not distinguish between the information the student learned in the course and the information that student may have learned over many years of employment in the criminal justice field.

The fourth and final required component of an experimental design consists of randomization and the equivalence of groups. Equivalence means that one uses a random process to assign people to one of the design categories (the experimental or control groups). Equivalence does not mean that the allocation of individuals to each group is a haphazard process; it means that the researcher ensures that every eligible person or group has the same probability of receiving any level of the independent variable (treatment). This equivalent allocation process ensures that differences in outcomes (based on measures of dependent variable levels) are attributable to variations in the treatment condition (independent variable) and not to preexisting differences between groups.

Reliability and validity are concerns for any type of design methodology. Reliability refers to consistency in the measurement of the variable. Validity is the extent to which a specific measurement of a variable actually measures what it is supposed to measure. Each experimental research design, in general, should address reliability and validity concerns, and each project will have its own unique threats to reliability and validity. Recall that differences in the outcomes of the control group versus the experimental or treatment groups are supposed to be attributable to the effect of the independent variable. In any particular research design, however, other forces or factors may influence the outcome of the study. The intervention of those outside forces or factors threatens the validity of any apparent cause-and-effect relationships between the independent variable and the dependent variable. These threats to a study design's internal validity are numerous and may include such things as history, maturation, testing, instrumentation, statistical regression, selection bias, experimental mortality, and selection-maturation interaction (Hagan, 2010).

Threats to a Study's Internal Validity

In the context of threats to the validity of an experimental design, *history* is a threat when an observed effect might be due to an event that takes place after the pretest and before the posttest and is beyond the realm of influence or control of the research design. In much laboratory-based experimental research, the history threat is controlled by insulating participants from outside influences (e.g., by locating participants in a quiet and controlled lab setting), by making sure there is only a brief window of time between the pretest and the posttest, or by choosing dependent variables that cannot plausibly be affected by outside forces (e.g., such as with lab-based psychology experiments).

Maturation is a threat to a study's validity when an observed effect might be due to the participants growing older, wiser, stronger, or more experienced during the lag time between the pretest and posttest. Thus, the threat of maturation must be addressed and accounted for in experimental designs, particularly for those with long time horizons, like studies involving juvenile offenders. One of the more stable patterns in criminology is the age-crime curve, which shows that violent crimes and property offenses reach their peak in a person's late teen years (Laub & Sampson, 1993). Experimental designs examining the impact of a program or intervention for juvenile offenders should consider the aging out process in addition to the impact, if any, of the program.

Testing is a threat to research design validity when the differences between the pretest and the posttest can be attributed to participants' familiarity with the test used as the dependent variable. For example, study participants may enhance their performance on later tests if they remember test

items or patterns from earlier testing sessions. A related problem is that participants might guess what the research is seeking to test and then craft their responses to fit their own hypothesis for what the study is seeking to determine.

Instrumentation is a threat to validity when an effect may be attributable to a change in the measuring instrument between the pretest and posttest and not to the treatment's differential impact at each time interval. Thus, the testing threat to internal validity exists when people become more experienced between the pretest and posttest, while the instrumentation threat exists when there is a change in the measuring method or tool at different points in time.

A related threat to internal validity is *statistical regression* (Hagan, 2010), which exists because there is a tendency for groups or people at the extremes of a distribution to move toward the middle of the distribution (in statistical terms, the mean or average). Thus, the change measured in a group over time may be attributable to the fact that some participants at the beginning of the study were exhibiting extremes of behavior and during the study they modified their behavior so that it was more in line with the group average. For example, studies show that juveniles and adults who commit offenses at extremely high rates will eventually reduce their offense rate. There are numerous reasons for this tendency. The individual may be incarcerated for a period of time (with increasing probability for longer periods of incarceration); high-rate offenders may be using alcohol, drugs, and tobacco, resulting in poorer health; and lower education levels combined with high-risk activities are likely to take a physical toll on the individual.

The composition of the study participant groups may also introduce the threat of *selection bias* to internal validity. Selection bias occurs when the control group is not equivalent to the comparison group in some key respects. Traditionally, individuals who readily volunteer for participation in a study may have some fundamental personal differences in comparison to those individuals not so eager. Participants who drop out, cannot be located, or even die during the study (as in the case of long-term research) may differ in key respects from those who complete the study. This phenomenon is known as *experimental mortality*, and to address this threat to a study's validity it would be critical to determine in what ways the group no longer in the study is different from the participants remaining and whether these differences are associated with the outcome variable. For instance, Laub and Sampson (2003) note that mortality and incarceration have an obvious impact on the continuity of criminal offending, and offenders have a lower life expectancy than do nonoffenders. In their reanalysis, this phenomenon resulted in 50% of their delinquent sample being dead by age 70 compared to less than 30% of the nonoffenders in the study. This trend began early; by age 32, the offenders had a mortality rate that was double that of the nonoffenders. The period of time that individuals are at risk for offending is thus a key factor in experimental design.

A good experimental design requires the isolation of the stimulus to the treatment group; thus, only the experimental group should receive the intervention. The threat to internal validity when the stimulus is not contained or when there is sufficient interaction between the experimental and control groups such that the stimulus is no longer confined to the experimental group is known as *imitation* or *diffusion of treatment*. In effect, the control group has become contaminated to some degree. A related threat to internal validity is *compensatory rivalry*, in which the control group wants the same treatment the experimental group is receiving because that treatment is viewed as desirable. The experimental treatment may create among participants the perception of an inequality as a result of the experiment. Thus, compensatory rivalry is a rivalry between the control group and the experimental group as a result of this perceived inequity. The control group, as the underdog, may be motivated to reduce or reverse the expected difference due to a competitive spirit. The op-

posite response—a sense of resignation due to feelings of inadequacy or frustration—would result in *demoralization*, also a threat to internal validity.

One of the purposes of an experimental design is to make a cause-and-effect determination as to the power and influence of the tested independent variables on the dependent variable. Researchers seek to control or limit the ability of outside factors or forces to influence the dependent variable. In some situations, it may be difficult to specify the influence of a specific independent variable when multiple treatments are included in the design. The result is a threat to external validity known as *multiple treatment interferences* or *multiple treatment effects*. In crime prevention studies, there are a number of research examples to illustrate the issue of multiple treatment effects.

Threats to a Study's External Validity

An experimental design's validity may also face external challenges. If a study has external validity, then the results can be generalized to other places and times. Certain factors may limit this generalizability. An example of such a factor is the *interaction of selection and treatment*, which addresses the question of whether the results can be generalized beyond the groups or participants in the original study. Findings of a study using particular participants may be limited to similar groups based on such factors as race, social class, geography, age, or sex.

Likewise, the *interaction of setting and treatment* may limit the generalizability of the findings (Hagan, 2010). Research conducted in a specific type of setting may yield information that is not applicable to other groups in other settings. For instance, there is much research conducted in which all of the study participants are college undergraduates, but researchers must then ask themselves to what extent college students differ from the larger population.

The *interaction of history and treatment* refers to the impact that the past and future can have on particular causal relationships. Thus, particular issues may be unique to a particular time period. For example, Laub and Sampson (1993) analyzed data from a large group of individuals who participated in a long-term study. Members of this research study group lived during the Great Depression, served in World War II, and experienced the postwar economic period. This group faced a unique set of challenges that also provided a unique set of opportunities for young men from lower economic status groups. For instance, military service in World War II provided these men with geographic mobility, GI Bill educational opportunities, and enhanced employment opportunities. Those benefits also effectively removed them from neighborhood environments that may have nurtured criminal activity.

From Research Methodology to Theoretical Models

There are several theoretical models that may suggest new approaches to preventing crime. A sound theoretical model buttresses an effective research methodology and vice versa. The work of Sherman and Weisburd (1995) illustrates this connection. The pair conducted an experiment measuring the impact of increased police presence on activity in crime hotspots. Their study built on the foundation of the Kansas City Patrol Study, which found no difference in crime levels, or other key outcomes, based on levels of police patrol. The Sherman and Weisburd study also underscores and reinforces a key notion in the field of crime prevention research: the importance of rigorous replication studies.

Despite the fact that law enforcement agencies, in traditional terms, *react* to crime, their involvement in *preventing* crime has been evident since the inception of actual police departments.

Many researchers contend that Sir Robert Peel envisioned crime prevention as a primary mission of the entity he established: the London Metropolitan Police Department. Peel's nine principles of policing begin with that very assertion:

- The basic mission for which the police exist is to prevent crime and disorder.
- The ability of the police to perform their duties is dependent upon the public approval of police actions.
- Police must secure the willing cooperation of the public in voluntary observation of the law to be able to secure and maintain the respect of the public.
- The degree of cooperation of the public that can be secured diminishes proportionately to the necessity of the use of physical force.
- Police seek and preserve public favor not by catering to public opinion, but by constantly demonstrating absolute impartial service to the law.
- Police use physical force to the extent necessary to secure observance of the law or to restore order only when the exercise of persuasion, advice, and warning is found to be insufficient.
- Police, at all times, should maintain a relationship with the public that gives reality to the historic tradition that the police are the public and the public are the police; the police being only members of the public who are paid to give full-time attention to duties which are incumbent upon every citizen in the interests of community welfare and existence.
- Police should always direct their action strictly towards their functions, and never appear to usurp the powers of the judiciary.
- The test of police efficiency is the absence of crime and disorder, not the visible evidence of police action in dealing with it. (Nazemi, 2009)

According to this historical perspective, police agencies should ideally prevent crime from happening rather than merely react to crime after it occurs. The concept of crime prevention makes intuitive sense if one follows the precepts of utilitarianism, the philosophy in which one seeks the greatest possible good for the largest number of people. A primary crime prevention technique used by the police is preventive patrol. Police departments have employed this tactic since the formation of early police departments right up to today. O. W. Wilson, a leading police professionalism advocate of the early 1900s, stressed the need for an omnipresence of police on patrol (Kelling & Coles, 1996, p. 78). There have of course been many technological advances in patrolling since then, such as those described in Chapter 3 by Smith and Scott. In the first half of the 20th century, police officers were able to begin motorized patrols and radio dispatching for calls for service. Kelling and Coles note that between calls for service, police would patrol public areas and remain on alert for possible crimes in the area. This patrolling activity was intended to create the perception among the public that the police were everywhere, essentially an omnipresence in the community, which would theoretically deter would-be criminals. The emphasis on preventive patrol remained largely untested and unchallenged for decades, until the Kansas City Patrol Study appeared. That research represents a landmark effort to assess the effectiveness of preventive patrol (Kelling, Pate, Dieckman, & Brown, 1974).

Experimental Design Examples in Policing Research

Aware of two key shortcomings in the Kansas City Patrol Study, Sherman and Weisburd (1995) determined that the famous study's experimental design created a built-in bias toward the finding that preventive patrols had no effect on crime. They noted that this bias derived from the fact that

the Kansas City study involved only 15 precincts, a rather small sample. Conversely, many studies, such as surveys with very large samples, have a built-in bias toward the finding of statistically significant differences, although the true nature of that difference is rather small. The other shortcoming of the Kansas City study was that it covered a rather large geographic area, and Sherman and Weisburd note that it was difficult to determine the level of police presence at any specific location. For their own study of police patrolling, Sherman and Weisburd (1995) focused on 110 crime hotspots in the city of Minneapolis, Minnesota. These locations, generating nearly 11% of the total calls for service in the city, were narrowly defined clusters of addresses. These clusters, however, did not include hotels, schools, commercial buildings, or areas that may have overlapped with other hotspots. The researchers randomly divided the 110 locations into an experimental group and a control group. In the year prior to the study, the experimental group logged about 19,322 total calls for service and the control group logged 19,693 calls for service. For the experimental group locations, the researchers requested 3 hours' worth of total police presence between the hours of 11:00 PM and 3:00 AM, a period corresponding to the highest distribution of calls for service (the actual policing hours did not reach the target goal of 3 hours, however). The experimental group did receive roughly double the amount of police presence that the control group received, as measured by observers on the research team and in police logs. Police activity during this directed patrol assignment was not defined, so the officers engaged in a variety of activities. The research intent was merely for officers to stay at the hotspot for a relatively short period of time but to return to it as frequently as possible.

Sherman and Weisburd (1995) report that using directed police patrols in crime hotspots produced a modest deterrent effect. They describe the impact as a microdeterrence effect since the impact had a small geographic application and the displacement of crime was not tested. Displacement of crime refers to the movement of crime from one location (in this case, the physical area receiving a fairly significant level of police presence) to another area. In effect, there is a potential for motivated offenders to seek criminal opportunities in other areas where there is less official supervision and police presence. Sherman and Weisburd note that the optimal length of police presence in the directed patrol is about 12 minutes and that the directed patrol had a noticeable impact on social disorder, which includes activities such as prostitution and public drinking. Their results indicated that social disorder was present in 1 of every 50 encounters on the street in the experimental group, while in the control group, social disorder was present in 1 of every 25 encounters.

Braga and Bond (2008) prepared an experimental design to examine how a strategy for policing social disorder might affect crime rates in Lowell, Massachusetts. The policing strategy they tested drew elements from the so-called SARA model (scanning, analysis, response, and assessment). They analyzed crime and calls for service in Lowell and found 34 hotspots. Hotspots were matched and randomly assigned to either the control group or the experimental group. These hotspots, although constituting only 2.7% of the total area of the city, accounted for 23.5% of all police calls, 29.3% of the violent crimes, 25.1% of property crimes, and nearly 20% of the disorder-related calls. The researchers measured displacement of crime by using a two-block catchment area for data comparison.

As part of the study, Braga and Bond (2008) conducted monthly meetings with the police captains responsible for patrols in the experimental group of hotspots. A variety of strategies for policing disorder were implemented based on the characteristics and the specific nature of the problems associated with the hotspot. The researchers note that 4.4 strategies on average were used at each hotspot in the experimental group, with 2 to 8 interventions for each location. These interventions included improving street lighting, securing vacant lots, doing code inspections,

employing stop-and-frisk procedures, and increasing youth recreation opportunities. The locations of the control group hotspots were not revealed to the police captains charged with reducing the crime rate at the experimental group hotspots; although some hotspots in the control group did receive additional interventions, none was considered long term.

Braga and Bond (2008) collected data on calls for service as one outcome measure. In addition, the researchers made systematic observations of the patterns of street activity and took standardized photographs of each hotspot. They then coded the amount and type of physical disorder at each location. The researchers also personally observed each of the hotspots to record the number of incidents of social disorder. The experimental group and the control group yielded fairly large and statistically significant differences. Specifically, the researchers reported that the experimental group saw a 19.8% decrease in total calls for service, a 41.8% drop in robbery calls, and a 35.5% reduction in burglary calls. Interventions also eliminated social disorder in 15 of the 17 hotspots and physical disorder in 13 of 17 hotspots. Although there was some displacement of crime and disorder to the immediate catchment areas, the amount was not statistically significant. Based on their study results, Braga and Bond (2008) advocate situational crime prevention strategies that focus on removing motivated offenders from specific locations and increasing the perceived risks of offending.

Case Studies

In addition to experimental designs, researchers may use other methods to develop and examine crime prevention strategies. In some situations, experimental designs, although considered the most desirable technique for determining cause-and-effect relationships, are not practical or cannot be used at all. In such situations, researchers studying crime prevention may employ case studies to document policing procedures and determine which theoretical models underlie those procedures. Berg (2009) describes the case study method as a weaker sister of other social science methodologies but contends that the advantage of case studies is that they provide in-depth, extensive information about a particular event, situation, or group.

One of the better known case studies in the field of crime prevention research involves efforts to identify and respond to crime and disorder at New York City's Port Authority Bus Terminal, the size and complexity of which made it impossible to use an experimental design. The team conducting the Port Authority case study (Felson et al., 1996) identified numerous problems at the transit facility, particularly disorderly activity, which rose to the level of impeding legitimate transportation functions.

According to Felson et al. (1996), the bus terminal averaged 174,000 passengers a week, more than 6,800 buses used the facility each day, and more than 200 gates were in use for loading and unloading buses. The levels of disorder and crime in the bus terminal were also due in part to its proximity to Times Square. The facility underwent numerous design and operational changes to reduce opportunities for crime and crime attractors within the facility (Felson et al., 1996). At the time of the implementation of these changes at the bus terminal, Times Square had a reputation for drug distribution, prostitution, and street hustling. The transit facility was described as "a grim gauntlet for bus passengers dodging beggars, drunks, thieves, and destitute drug addicts" (Manegold, 1992, p. 1, as cited in Felson et al. 1996, p. 10).

The Port Authority terminal, Times Square, and adjacent areas had many interconnected problems. For example, in the early 1990s, before the advent of cell phones, travelers had to rely on public telephones, but in the bus terminal many of the banks of public telephones had been co-opted by criminal entrepreneurs who charged a flat rate for unlimited international calling. People

wanting to use the telephones for legitimate purposes faced threats from these scam operators. In addition, homeless individuals, as well as those transients technically with a place to live but who spent part of their day at the bus terminal, constituted a major obstacle to the efficient operation of the facility. Hundreds of persons thus lived within the facility. The problem of having a homeless community living in the terminal made headlines when a five-gallon drum of human waste fell from above a bus gate and when transients made homes above the removable ceiling tiles in the facility's restrooms. Officers with the Port Authority Police Department could do little in response to the issue of loitering within the facility because then-recent New York court cases protected transients from ejection from public places (a later case stripped panhandling of any constitutional protection). In addition, police did not consider transients' loitering and panhandling to be important or worthy targets of police work. The Port Authority Police Department did not ignore these more minor issues, however; in conjunction with a social service agency, Project Renewal, the department instituted a "refer-or-arrest" policy in which transients would be given a choice to move along, be arrested, or be referred to the social service agency. In addition, Port Authority officers received additional training for dealing with transients' issues. Other major problems for police focus were prostitution and the sale and use of drugs. Prostitutes and drug dealers plied their trade in many areas, some open, some hidden within the facility. Fear among travelers and members of the bus terminal's business community (those who rented retail space within the facility) faced high levels of social disorder and crime, especially robbery, pickpocketing, theft of luggage and other items, and assault.

The strategic interventions selected to transform the Port Authority Bus Terminal were designed to make the facility easier to navigate from the perspective of its travelers (Felson et al., 1996). Of particular note here is the role of physical changes to the facility and their impact on the activities within the building. Crime prevention through environmental design (CPTED) was the dominant theoretical model at the time, and a key focus in the project was on improving the flow of people through the facility and eliminating the nooks and crannies within the facility (Felson et al., 1996). These niches often teemed with loitering transients or other undesirable activity. Loitering and various other undesirable activities were perceived as crime attractors, as well as obstacles for maintenance staff trying to perform their duties. The CPTED plan emphasized increasing and improving retail space within the facility. The renovations removed physical niches, and in some cases minor construction created new retail spaces for rent-paying tenants, who provided both revenue to the facility as well as natural surveillance in a particular area. Physical redesign made storefronts more appealing to the thousands of commuters and also removed features that attracted crime and disorder to the location. The physical changes to the restrooms clearly highlight the application of situational crime prevention strategies. These changes included closing off smaller restrooms, changing ceiling tiles, replacing old stall doors with a new model allowing a visual inspection of how many feet were in a stall at one time, and replacing larger sinks with smaller size units (see Felson et al., 1996, p. 28, for the complete list of restroom changes). Similar efforts to eliminate loitering included replacing benches in the terminal's waiting areas with plastic flip seats that prevent someone from lying across several chairs. In addition to the facility's reputation for crime, the overall appearance of the facility was grim and did nothing to counter negative public perceptions. Thus, the efforts to transform the facility included new procedures for cleaning the floors, improved lighting, glass block for walls, and sealing off little-used stairways.

Felson et al. (1996) note several positive findings involving data collected before, during, and after the physical renovations and policing reforms at the bus terminal. They report that satisfaction levels increased, complaints about social problems declined, revenues/sales increased, and the

number of actual crimes reported decreased. The researchers do point out however, that there were some drawbacks of the case study: it was retrospective in its approach, multiple treatments were implemented simultaneously, and it did not utilize an experimental design. Despite these drawbacks, this case study does identify numerous environmental and physical changes that reduce crime and disorder and that may be applicable to other venues.

Another noteworthy case study involves crime prevention efforts in the Metro subway system (La Vigne, 2006), which began operating in Washington, DC, in 1976. The researcher who conducted this case study notes three key features of the Metro's crime prevention system: its architectural design, the management's rigid maintenance policies, and stringent rule enforcement. Each of these features has been linked to the system's relatively low crime rate. When the Metro's planners were designing the system, they were able to take advantage of lessons learned from numerous older systems. They integrated both aesthetics and physical security measures (i.e., target hardening approaches) into the system's design, such as uniform platform length to accommodate the entire span of the train so that no cars are left without direct access to the platform. Designers opted for long escalators rather than stairways for the descent into the transit stations so as to avoid blind corners, which may attract potential offenders, and landings, which may attract transients. Transit police enforce rules that enhance quality of life in the system; there are prohibitions against eating, drinking, and playing loud music. Maintenance policies require that graffiti be reported and removed immediately and that lighting problems be corrected without delay. La Vigne (2006) compared the Metro's crime rate to that of three other subway systems, as well as to the census tracts above its stations. Results indicated that Metro riders experienced lower crime rates than did riders of the other three systems studied. In addition, La Vigne notes that Metro crime rates do not vary station to station, whereas the crime rates for the aboveground census tracts do show variation.

SAMPLE TOOLS IN CRIME PREVENTION THROUGH DESIGN

Street Lighting

In their review of theory and research on street lighting and crime, Farrington and Welsh (2007) mention multiple theoretical models promoting the use of lighting to deter crime. They also point to an array of street lighting research findings indicating everything from a positive impact on crime prevention to a negative one, with much of the work prior to 1990 indicating that lighting did not prevent crime. According to these researchers, improved street lighting is a component of CPTED that specifically increases the risk of detection for offenders. Improved lighting can also be one aspect of a community reinvestment program. Similarly, improved lighting may allow the conventional population (i.e., law-abiding nonoffenders) to increase their use of urban spaces at night. Improved lighting may thus be used to exert social control over a particular place during nighttime hours. However, improved street lighting could actually increase crime because more people may be out at night, thus increasing the opportunity for criminal victimizations.

Farrington and Welsh (2007) identified 13 studies of street lighting that met the criteria for inclusion in their analysis. All of those studies utilized an experimental design of street lighting and crime that had at least 20 crimes in its pretest, but the studies did vary in terms of the qualifiers used to describe the level of improved lighting. Ideally, such studies should have three geographic areas: the experimental area, the control area, and an area adjacent to the experimental area for

determining whether crime was displaced from the experimental area because of its increased lighting, to a less well lit area nearby. Repetto (1976, as cited in Farrington & Welsh, 2007, p. 214) has written that five types of crime displacement (also known as diffusion) are possible: temporal (crime is delayed to another time), tactical (offenders shift to a different method), target (offenders choose a different victim), territorial (offenders move to a different place), and functional (offenders choose to perpetrate a different type of crime). Although improved lighting may displace crime to an adjacent area, another possible outcome is that crime also decreases in the adjacent area due to the diffused benefits of lighting. In other words, the positive effects in one area may spill over into nearby areas.

Based on the results of the 13 studies examined by Farrington and Welsh (2007), improved street lighting reduced crime by about 20% in the experimental areas compared to the control areas. Eight of the 13 locations studied were in the United States, and the researchers note that four studies indicated that better lighting had a positive impact on crime (i.e., it reduced crime rates), while four studies showed no difference in crime between the experimental areas with improved lighting and the control areas. The five studies conducted in Britain showed that lighting had a greater impact; those studies noted that crime decreased 29% in the experimental groups. Interestingly, the reduced crime rates are based on comparisons of day and night crime rates rather than just nighttime crime rates. Farrington and Welsh note that this overall reduction in crime both day and night, not just at night when street lighting becomes a factor, may reflect increased community involvement and community pride rather than simply the deterrence effect of improved lighting.

Closed-Circuit Television

Many crime prevention professionals consider closed-circuit television (CCTV) a promising approach for deterring criminal activity in public places as well as for identifying individuals who commit crimes in areas with surveillance cameras. Technology associated with CCTV has become less expensive, improved in quality, and gained a certain level of social acceptability. Welsh and Farrington (2009) note that, despite a tremendous increase in the deployment of CCTV, its use presents several problems. CCTV is not cost effective, and monitoring the images produces boredom to the point that, after the initial novelty of CCTV wears off and the perceived threat level diminishes, monitoring of the images is reduced.

To address the shortcomings of CCTV and to take advantage of the public's voyeuristic tendencies, one company, Internet Eyes®, has created a unique business model in which businesses subscribe to a service that webcasts their CCTV feeds. Subscribers who have registered for access to the video feeds then monitor the webcasts and watch for suspected violations, which are reported to the monitoring station. The subscribing business then receives an alert so that it can take action. The company's website is <http://interneteyes.co.uk/>.

Opera Solutions

To prevent more sophisticated types of crimes, such as financial fraud, one company uses advanced analytics and data management capabilities to assist private firms and public agencies in managing their data for decision-making functions. Opera Solutions helps companies and government entities minimize risk associated with credit and lending practices. Major companies, such as Google, use similar technology to provide recommendations customized for each user based on patterns of

similar users (Opera Solutions, 2010). Opera Solutions developed a tool called Matrix Factorization Singular Value Decomposition (SVD) to categorize individuals based on their characteristics compared to known consumer habits (Opera Solutions, 2009). In a sense, this type of modeling that predicts people's behavior might be termed "economic profiling."

Companies can use the data generated by prediction tools like the one developed by Opera Solutions to identify patterns associated with something called "bust-out fraud." Opera Solutions describes a bust-out fraud scenario as a situation that occurs when credit card holders buy many items within a short period of time and reach their maximum credit limit without the intention of paying the credit card company (Opera Solutions, 2009). Individuals engaged in bust-out fraud then sell the recently purchased items for cash. The credit card company is unable to recover payment for the goods sold, and the associated losses are passed on to consumers. Opera Solutions uses nonlinear modeling techniques to compare patterns of previous bust-out fraud cases to the purchasing patterns of current card holders. Their intent is to provide credit card companies with the tools and information needed to take precautions and minimize the financial losses associated with this type of crime. For the financial services industry, Opera Solutions offers analytic techniques for identifying prospective customers. As relationships between the financial entity and customer progress, Opera Solutions seeks to predict customer behavior in an effort to maximize profits through service delivery while attempting to minimize the risk of financial losses associated with specific individuals. The type of analytic modeling information provided by a company like Opera Solutions enables companies to detect potential fraud or an impending default on a loan. There are numerous other applications for analytic modeling technology in crime prevention efforts. Although not as robust as the models described previously, analytic tools have been used to develop instruments such as offender risk needs assessments. Such tools have many possible applications, including homeland security, securities code enforcement, public assistance claims, and medical claims.

LEGISLATIVE EFFORTS AND CRIME PREVENTION

While much of the focus of crime prevention centers on law enforcement activities and public awareness, preventing crime can also be a stated goal of corrections programs, legislation, and the courts. Sentencing and parole policies are important factors in crime prevention because they determine the criteria for releasing offenders, who may or may not return to criminal pursuits. For instance, the state of New Hampshire (2010) passed Senate Bill 500, which called for changes in the probation, parole, and sentencing of certain offenders in an effort to increase public safety, strengthen community supervision, and reduce recidivism. The legislation noted that nearly 60% of admissions to the state prison system in New Hampshire were because of probation and parole revocations. Another concern the legislation noted was that about 16% of the state's prison population had served their entire sentences and were released into the community without any correctional supervision. A key provision of this legislation requires each state prisoner to have at least 9 months of postrelease supervision, with the exception of those prisoners who are the subject of a pending petition for civil commitment. A controversial aspect of the legislation concerned parole revocation decisions. Under the new legislation, if a parolee violates conditional release criteria and is to be returned to prison, he or she would serve a maximum of 3 months and then be released on parole once again. The intent of the legislation was to enhance community-

based sanctions, controls, and supervision using resources that would otherwise have been spent on incarceration costs.

Community-based crime prevention efforts often involve preventing drug crimes through nuisance abatement programs, which employ civil remedies and procedures to resolve drug-related cases. There are numerous models for these programs, but they typically begin with a process that involves producing initial documentation of the problem. This initial step may be the result of undercover officers buying drugs or making an arrest for a drug-related offense at a particular location. The city would notify the landowner at that location about the nature of the nuisance and identify what steps the landowner should take to remedy the situation. In their examination of community-based efforts at drug prevention through nuisance abatement programs, Davis and Lurigio (1996) note that the majority of problematic situations were resolved after the city identified nuisance issues in written communication to a landowner and the landowner subsequently took action to remedy the situation. Most often this remedy involved the eviction of tenants.

Nuisance abatement programs may incorporate a variety of sanctions, for example, building code enforcement. Although cities can implement a variety of ordinances as part of nuisance abatement programs, landowners must cooperate if the program is to be successful. If landlords fail to take satisfactory actions, the city could in many cases seize the property and sell it at auction. During the process, tenants may be evicted, buildings padlocked, and landlords denied rental income as long as the owner remains in noncompliance. In some programs, proceeds would go to any mortgage lien holder and then to the city to fund the program; the owner would not receive any funds from the sale.

In a study of how effectively nuisance abatement programs operated in practice, Davis and Lurigio (1996) considered a building in Milwaukee, Wisconsin that, with only 36 rental units, generated 164 arrests over a 2-year period. When the city attempted to compel the owner to make required changes, a legal battle ensued. Before the case could be resolved, the building burned. However, most of the Milwaukee cases Davis and Lurigio studied did not require action beyond the city's letter asking the landlord to make required changes. They do note, however, that fairness in the nuisance abatement procedures is critical and that eviction proceedings will affect not only the targeted nuisance but also law-abiding families.

McCabe (2008) examines the influence of nuisance abatement closings, drug arrests, and marijuana arrests on the rates of serious crime in the borough of Queens, New York, from 1995 to 2000. The theoretical context for McCabe's study was Kelling and Wilson's (1982) broken windows theory. The theory contends that signs of social and physical disorder, such as broken windows, will lead to greater amounts of disorder as well as contribute to a downward spiral of informal social control in the area. The geographic area with visible signs of disorder will become a magnet for more serious offenders, causing more conventional users of the area to alter their behavior even more. Advocates of the broken windows theory contend that authorities should employ zero tolerance policing and order maintenance strategies to improve neighborhood quality of life.

According to McCabe (2008), New York law permits nuisance abatement by allowing the city to seek a court declaration closing a specific building for 1 year. The threshold to determine whether a nuisance exists in a specific location is three arrests for violations of the drug laws or marijuana offenses on three different dates at the location within 1 year. The justification for the law is that such nuisances interfere with the public's interest in maintaining the quality of life, tone of commerce, and property values and that they have a negative impact on public health. While McCabe (2008) points to significant declines in the overall crime rate between 1995 and 2000, McCabe was also

interested in determining the individual contribution of several variables to the decline and used statistical analysis to determine the impact of demographic variables such as poverty, unemployment, and demographics in specific police precincts in Queens.

McCabe (2008) reports that demographic and social variables such as poverty and unemployment were not associated with the crime rate reduction in Queens. Arrests for violations of drug laws, however, were positively associated with arrests for serious crimes such that an increase in serious drug arrests correlated with an increase in arrests for seven of the eight offense categories in Part I of the FBI's Uniform Crime Reporting handbook (arson was the exception). Arrests for marijuana violations were negatively associated with the serious crime rate. Closings of buildings for nuisance abatement purposes were strongly correlated with a reduction of serious crime. McCabe's interpretation of these findings suggests that the threat of arrest did not deter drug offenders, who continued to seek out sources of revenue to buy drugs, thus generating street crime. Marijuana users, on the other hand, were more integrated into mainstream society and were deterred by the threat of arrest. Nuisance abatement closures of buildings linked to drug sales disrupted users' drug-seeking behavior. McCabe (2008) cautions that particular situations may have impacted the findings. For example, during the study period the nature of the city's drug problem was evolving as crack cocaine use declined, and being arrested for drugs had more of an impact on some persons than on others.

Due to the complicated web of legal issues surrounding nuisance abatement, the Office of the Attorney General for Texas provides law enforcement agencies with a manual of instruction on proper use of the state's nuisance abatement laws (Abbott, 2005). Authority for nuisance abatement in Texas is based on two sources: the Texas Civil Practice & Remedies Code and the Texas Alcoholic Beverage Code. Nuisance abatement can be used to remedy problematic situations caused by such things as drug-related activities, gang activity, and alcohol violations. The process emphasizes remedies short of closure of the property, payment of fines, or jail time. Another emphasis is the need for accurate information concerning the nuisance activities; such information may include arrest reports, testimonials, and photographs documenting the condition of the property. Documentation of, for example, six arrests for similar types of behavior within a year at one location may constitute a nuisance under the Texas statutes (Abbott, 2005). When a law enforcement agency has gathered the proper documentation of a nuisance, it sends a written notice to the property owner to arrange a meeting in which the two parties discuss the nature of the allegations and a set of recommendations for compliance. Ideally, the owner takes the necessary steps to bring the property into compliance. If the owner does not take the necessary steps, the building may be closed for up to 1 year or a bond posted to keep the building open. Law enforcement would investigate further to determine whether the nuisance activities continue.

CONCLUSION

According to the authors of *Preventing Crime: What Works, What Doesn't, What's Promising* (Sherman et al., 1998), most crime prevention evaluation studies have not been evaluated with sufficient rigor to make possible any definitive statements about their value. The work of Sherman et al. highlights federal funding initiatives that have provided resources for crime prevention programs to deliver services yet have not paid sufficient attention to analysis of the effectiveness of those programs and services. The researchers' emphasis on using scientific principles to evaluate programs lends

greater objectivity to the evaluation process, which means that their findings have greater value, whether the impact of those findings is positive or negative. Their work also inaugurated a standard metric, the five-point Maryland Scale of Scientific Methods (MSSM), for evaluating the quality of experimental designs addressing similar populations or problems. According to the Maryland Scale, level 5 studies were the most scientifically rigorous and level 1 studies, the weakest. For a study to have level 3 quality, the design must have an experimental group and a control group. Thus, a level 3 study is rigorous enough to determine whether an intervention program is or is not working because the difference in outcome between the two groups indicates the effectiveness or impact of the program.

Sherman et al. (1998) identified numerous initiatives that were reported to be working to prevent crime and delinquency and that were supported by available evidence. Many of these programs will be discussed in subsequent chapters. Among the programs they identified as working effectively were nurse visits to homes with infants, reinforcement of positive behaviors in school, nuisance abatement, hotspot policing, and prison-based drug treatment. They also identified examples of programs that, based on outcome evaluations, were not working as intended. These included gun buy-back programs, Project DARE, Scared Straight, and storefront police offices. As society deals with shifting demographic and economic dynamics, there is increasing emphasis on more rigorous evaluation of all manner of programs, especially those supported by tax dollars. More rigorous assessment of programs serves multiple positive objectives, not least among them the opportunity to ensure that scarce resources are not wasted on programs that do not work as intended.

CRIME PREVENTION AND YOUTH

Society is becoming ever more proactive when it comes to crime. Most entities, whether businesses, religious groups, or schools, now undertake some sort of crime prevention effort. Schools, for example, once focused primarily on fire safety, customarily conducting fire drills. Many schools now have security plans and prepared responses for a variety of hazardous situations, including criminal behavior.

The Boy Scouts of America have merit badges related to crime prevention and emergency preparedness.

BOX 1-1 Crime Prevention Merit Badge

1. Discuss the role and value of laws in society with regard to crime and crime prevention. Include in your discussion the definitions of "crime" and "crime prevention."
2. Prepare a notebook of newspaper and other clippings that addresses crime and crime prevention efforts in your community.
3. Discuss the following with your counselor:
 - a. The role of citizens, including youth, in crime prevention
 - b. Gangs and their impact on the community
 - c. When and how to report a crime

(continues)

4. After doing EACH of the following, discuss with your counselor what you have learned.
 - a. Inspect your neighborhood for opportunities that may lead to crime. Learn how to do a crime prevention survey.
 - b. Using the checklist in this (*the merit badge*) pamphlet, conduct a security survey of your home and discuss the results with your family.
5. Teach your family or patrol members how to protect themselves from crime at home, at school, in your community, and while traveling.
6. Help raise awareness about one school safety issue facing students by doing ONE of the following:
 - a. Create a poster for display on a school bulletin board.
 - b. With permission from school officials, create a page long public service announcement that could be read over the public address system at school or posted on the school's website.
 - c. Make a presentation to a group such as a Cub Scout den that addresses the issue.
7. Do ONE of the following:
 - a. Assist in the planning and organization of a crime prevention program in your community such as Neighborhood Watch, Community Watch, or Crime Stoppers. Explain how this program can benefit your neighborhood.
 - b. With your parent's and counselor's approval, visit a jail or detention facility or a criminal court hearing. Discuss your experience with your counselor.
8. Discuss the following with your counselor:
 - a. How drug abuse awareness programs, such as "Drugs: A Deadly Game," help prevent crime
 - b. Why alcohol, tobacco, and marijuana are sometimes called "gateway drugs" and how "gateway drugs" can lead to the use of other drugs
 - c. Three resources in your city where a person with a drug problem or drug-related problem can go for help
 - d. How the illegal sale and use of drugs lead to other crimes
 - e. How to recognize child abuse
 - f. The three R's of Youth Protection
9. Discuss the following with your counselor:
 - a. The role of a sheriff's or police department in crime prevention.
 - b. The purpose and operation of agencies in your community that help law enforcement personnel prevent crime, and how those agencies function during emergency situations.
 - c. Explain the role private security plays in crime prevention.
10. Choose a career in the crime prevention or security industry that interests you. Describe the level of education required and responsibilities of a person in that position. Tell why this position interests you.

Source: U.S. Scouting Service Project, retrieved from <http://usscouts.org/mb/mb131.asp>

BOX 1-2 Emergency Preparedness Merit Badge

1. Earn the First Aid Merit Badge.
2. Do the following: Discuss with your counselor the aspects of emergency preparedness:
 - a. **Prepare** for emergency situations
 - b. **Respond** to emergency situations
 - c. **Recover** from emergency situations
 - d. **Mitigate and prevent** emergency situations

3. Make a chart that demonstrates your understanding of each of the aspects of emergency preparedness in requirement 2a (prepare, respond, recover, mitigate) with regard to 10 of the situations listed below. **You must use situations 1, 2, 3, 4, and 5 below in boldface** but you may choose any other five listed here for a total of 10 situations. Discuss this chart with your counselor.
 - a. **Home kitchen fire**
 - b. **Home basement/storage room/garage fire**
 - c. **Explosion in the home**
 - d. **Automobile accident**
 - e. **Food-borne disease (food poisoning)**
 - f. Fire or explosion in a public place
 - g. Vehicle stalled in the desert
 - h. Vehicle trapped in a blizzard
 - i. Flash flooding in town or in the country
 - j. Mountain/backcountry accident
 - k. Boating accident
 - l. Gas leak in a home or a building
 - m. Tornado or hurricane
 - n. Major flood
 - o. Nuclear power plant emergency
 - p. Avalanche
 - q. Violence in a public place
4. Meet with and teach your family how to get or build a kit, make a plan, and be informed for the situations on the chart you created for requirement 2b. Complete a family plan. Then meet with your counselor and report on your family meeting, discuss their responses, and share your family plan.
5. Show how you could safely save a person from the following:
 - a. Touching a live household electric wire
 - b. A room filled with carbon monoxide
 - c. Clothes on fire
 - d. Drowning using nonswimming rescues (including accidents on ice)
6. Show three ways of attracting and communicating with rescue planes/aircraft.
7. With another person, show a good way to transport an injured person out of a remote and/or rugged area, conserving the energy of rescuers while ensuring the well-being and protection of the injured person.
8. Do the following: Tell the things a group of Scouts should be prepared to do, the training they need, and the safety precautions they should take for the following emergency services:
 - a. Crowd and traffic control
 - b. Messenger service and communication
 - c. Collection and distribution services
 - d. Group feeding, shelter, and sanitation
9. Identify the government or community agencies that normally handle and prepare for the emergency services listed under 8, and explain to your counselor how a group of Scouts could volunteer to help in the event of these types of emergencies.
 - a. Find out who is your community's emergency management director and learn what this person does to **prepare, respond to, recover from, and mitigate and prevent** emergency situations in your community. Discuss this information with your counselor and apply what you discover to the chart you created for requirement 2b.
10. Take part in an emergency service project, either a real one or a practice drill, with a Scouting unit or a community agency. Do the following:
 - a. Prepare a written plan for mobilizing your troop when needed to do emergency service. If there is already a plan, explain it. Tell your part in making it work.
 - b. Take part in at least one troop mobilization. Before the exercise, describe your part to your counselor. Afterward, conduct an "after-action" lesson, discussing what you learned during the exercise that required changes or adjustments to the plan.

(continues)

- c. Prepare a personal emergency service pack for a mobilization call. Prepare a family kit (suitcase or waterproof box) for use by your family in case an emergency evacuation is needed. Explain the needs and uses of the contents.
11. Do ONE of the following:
 - a. Using a safety checklist approved by your counselor, inspect your home for potential hazards. Explain the hazards you find and how they can be corrected.
 - b. Review or develop a plan of escape for your family in case of fire in your home.
 - c. Develop an accident prevention program for five family activities outside the home (such as taking a picnic or seeing a movie) that includes an analysis of possible hazards, a proposed plan to correct those hazards, and the reasons for the corrections you propose.

Source: U.S. Scouting Service Project, retrieved from <http://usscouts.org/usscouts/mb/mb006.asp>

INTERNET RESOURCES FOR CRIME PREVENTION

National Crime Prevention Council

<http://www.ncpc.org/>

Home Office

<http://www.homeoffice.gov.uk/>

Bureau of Justice Statistics

<http://bjs.ojp.usdoj.gov/>

The CPTED Page

<http://www.thecptedpage.wsu.edu/>

Center for Problem-Oriented Policing

<http://www.popcenter.org/>

Office of National Drug Control Policy

<http://www.whitehousedrugpolicy.gov/>

Office of Juvenile Justice and Delinquency Prevention

<http://www.ojjdp.gov/>

KEY TERMS

Crime prevention through environmental design

Nuisance abatement

Routine activity theory

Situational crime prevention

Experimental design

Crime hotspots

DISCUSSION QUESTIONS

1. In your view, what factors have contributed to the decline in the crime rate?
2. Describe how a college or university town could use nuisance abatement to control nuisance properties near campus.

3. Why have some programs endured even though research findings indicate that they do not work as intended?
4. Discuss the application of situational crime prevention principles to a college or university.

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