

# **MECHANISMS OF LEGAL EFFECT: PERSPECTIVES FROM PUBLIC HEALTH**

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A Methods Monograph for the Center for Public Health Law Research Temple University  
Beasley School of Law

OCTOBER 2023

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## Summary

Criminology is the scientific study of the nature, extent, causes, and control of criminal behavior. Two theories — deterrence and labeling — are widely used by criminologists to explain the influence of criminal law on behavior. Public health law researchers investigating effects of regulations and sanctions on health behavior can draw on these theories and the research methods and tools criminologists have devised to test them.

- Deterrence posits that the choice to act out criminally is a product of the rational assessment of the anticipated rewards of criminality versus the potential costs imposed by law. Manipulating this calculation (through punishment and the perceived likelihood of detection) is the underlying basis of deterrence.
- Labeling theory explains crime and criminal law as products of a social process of meaning making. Certain behaviors, not necessarily intrinsically harmful, are labeled as “crimes” and those who commit them as “deviants.” Labeling theory explains how these labels emerge and how people’s identities and behaviors are influenced by them.
- The two theories can be integrated to explain how ideas about crime, fears of punishment, and expectations of detection work in relation to each other to shape individual and aggregate behavior in response to law.

## Learning Objectives

- Identify how deterrence and labeling theory inform public health law research.
- Illustrate conceptual mechanisms through which deterrence and labeling affect public health outcomes.
- Assess how deterrence and labeling theory can be applied to criminal and non-criminal events from a public health perspective.

Criminology is the scientific study of the nature, extent, causes, and control of criminal behavior. Criminal law and public health overlap in a number of important ways. Crime causes both physical and psychological harm to victims. Violent crimes — murder, rape, assault — cause millions of deaths and injuries every year, particularly in the United States (Burriss, 2006; Grinshteyn & Hemenway, 2019). Criminal laws and their enforcement can cause unintended harm, as exemplified by deleterious effects of drug control measures on HIV risks for injection drug users (Allen, Grieb, O'Rourke et al., 2019; Burriss, Blankenship, Donoghoe, et al., 2004; Davis, Burriss, Kraut-Becher, Lynch, & Metzger, 2005). Criminal law is also an important regulatory tool used to discourage unsafe behavior, such as driving while intoxicated.

Criminology as a field of research also has important connections to public health science. Epidemiology and criminology overlap both in methods and substantive scope in the effort to investigate the nature, causes, extent, and control of harmful behavior. Some criminologists have gone so far as to propose a framework of “epidemiological criminology” to link the fields (Akers & Lanier, 2009; Anderson, Donnelly, Delcher, & Wang, 2021). For students and practitioners of legal epidemiology, criminology offers theoretical models and research tools for understanding how all regulatory rules — criminal, administrative, and civil — influence behavior. This chapter focuses on two key theories — deterrence and labeling — that can be used in public health law research to improve rigor and explanatory power. The chapter begins with a detailed description of these two key theoretical approaches. This is followed by a presentation of causal diagrams based on deterrence and labeling perspectives, as well as a diagram that integrates both. The discussion includes examples of ways to empirically examine these concepts. We close by pointing to broader applications.

## Theory in Criminology

Theory in criminology builds on key propositions emerging over the past few centuries – ideas that also informed other social science disciplines. And theoretical developments in closely

related fields such as sociology and psychology shaped the development of criminological theory (Akers, Sellers, & Jennings, 2020).

## **THEORETICAL ROOTS OF DETERRENCE**

The possibility of an empirical criminology was created by the emergence of two intellectual forces — naturalism and rationalism — both of which are associated with the historic period of the seventeenth century commonly referred to as “The Enlightenment.” Both of these strands are essential in understanding the foundation of the explicit and implicit theoretical dynamics of deterrence within contemporary criminology.

Prior to The Enlightenment any set of ideas that might be called a “protocriminology” would exclusively be identified with mystical views of the nature of causation in the physical world and supernatural causation of human behavior. In the case of overt, specific, and recognizable deviant and criminal behaviors, the sources of these were regarded as Satanic — either primarily mediated through spirit forces, such as possession by devils or demons, or secondarily induced by an actor or set of actors. These actors were mediators of supernatural forces and brought these forces into the persona by some form of act — for example, through sorcery, witchcraft, or the like.

Furthermore, there existed for more than a millennium an official Christian doctrine regarding innate and universal human characteristics that were criminogenic. Mystical Christian views imbued humankind with an “inclination towards evil” in an anticipation of the Hobbesian view, which suggested that evil, criminal, or deviant behavior itself ought not to be viewed as aberrant but was rather the natural expression of human nature as formed by the Deity. Thus, conformity to societal norms expressing “good” behavior was something that needed to be compelled — largely by a combination of self-discipline and internalization of norms, coupled with threats of supernatural punishment — in effect, a deterrence theory.

The Enlightenment began replacing these views in a gradual fashion, selectively negating many of the underlying assumptions of medieval supernaturalism. Perhaps with the exception of Beccaria (1764), it exhibited a slow pace of displacement rather than revolutionary transformation. Among the foundations of this change were arguments that causation of events was the result of a logical order to the world — once the underlying logical mechanism was known to the perceiver, the dynamics of events generally were not random and were comprehensible within a naturalistic paradigm. From this circumstance two critical ideas became established in comprehending the meaning of crime. First, human conduct obeyed a logic of cause and effect. Second, this sequence of causation was embodied within a natural, as opposed to supernatural, view of the world. The correct and consistent perception of this logic is the basis of rationality and consequently predictability in nature. Implicitly (but not

explicitly) supernatural factors are dismissed, or saved as some ultimate or ontological principle.

When the rationality of this view was extended to human behavior, two behavioral elements were established as explanations of human criminality. The first was that responsibility rested within the criminal actor — that such people were not acting under the influence of a force alien to them (such as possession by a spirit) and that there was logic to the choices they made. This logic was identified by Bentham (1789) as a “hedonistic calculus,” an element built into the very nature of human beings. The choice to act out criminally was a product of the rational summing of the coexisting elements of pleasure and pain, the anticipated rewards of the criminality combined with the potential risk of apprehension.

Influenced by this conceptualization of “human nature,” criminological ideas (still reflected in current deterrence theory) used this logic of motivation as the basis of human action in a completely naturalistic paradigm. Indeed, the history of all criminology can be seen as a movement from supernatural and mystical explanations toward naturalistic and secular conceptions of human conduct. This was neither sudden nor abrupt — indeed, it is still linked in the form of conceptions of the morality of law in contrast to purely behavioral law. However, causation outside of a naturalistic paradigm is no longer a part of the actual legal sphere.

### *Legal Deterrence*

Two fundamental ideas are linked together in the concept that undergirds legal deterrence. These are the hedonism of Hobbes and the utilitarianism of Bentham.

These two ideas created and allowed for a purely naturalistic setting in which the behavior of humans can be reduced to two governing principles — one active, and one passive, one micro-oriented, one macro-oriented. The Benthamite principle of utilitarianism focuses on the logic of the individual actor and uses this as the foundation of criminal behavior. Any subsequently observed large-scale social effects emerged from these individual properties. Characterizations of the large order consistent with this view are best expressed by Hobbes, who saw the emergence of civil society as itself an extension of the principle of rationality — a rational agreement in the form of a contract designed to shape, and especially to deter, violent and destructive human conduct.

### *Utility*

Benthamite utility is a mechanism that explains individual conduct as a rational choice that is the net outcome of an assessment of pain and pleasure. Its role in modern criminology is

incorporated in behavioral psychological mechanics as applied to criminal conduct and the imagination and prospective thinking of the criminal actor. Manipulating this utility (via a punishment-or-pleasure schedule or structure) is the underlying basis of deterrence. It is complicated by a variety of nuances around Bentham's ground-state mechanism of a hedonistic calculus. Among these are a series of elaborations that include differentials in perception of what is pleasurable and what is painful, how the temporal ordering of experiences of pleasure and pain influence behavior (such as lag), and the complexity of phenomena that contain simultaneous elements of both pleasure and pain.

### *Conflict*

The Hobbesian belief in the fundamentally anarchic and self-serving orientation of the human psyche can be coupled with the Benthamite hedonistic calculus. It is the fusion of these two views that completes the intellectual foundation of deterrence. Utility shapes the individual behavioral dynamic and Hobbesian control shapes the social policy component.

The Hobbesian view of the "natural state" of human life is grim. Hobbes's most noted observation comes from his work *Leviathan* and its most famed paraphrase, the "war of all against all," which would be the defining characteristic of social life without constraints. The motive of survival and the pursuit therefore of self-interest and self-advancement determine the dynamic of human conduct. In criminology, this most often is colloquially expressed by the statement that it is not criminal behavior which begs an explanation, but rather non-criminal behavior that is enigmatic. Indeed, Hobbesian views are comfortable with this quip. Conformity to the law is extracted through the threat of punishment. Absent that, one would fully expect an anarchic "war of all against all" as the natural product of human nature. The law serves as a protective buffer or insulator against the natural enmity that one human most likely will feel toward others. It is only through a filter of self-utility that relationships exist in the state of nature. Other forms of human conduct are compelled by the law and rely on Bentham's calculus to extract conformity. The law shifts the assessment of pleasure and pain from a variety of interactions sufficiently into the "pain" category and thus extracts obedience and conformity in ways that would be absent in natural settings.

In law, using deterrence as a social management strategy is based on the ideal of a functional consequence arising out of the act of punishment. It is therefore distinguished from retribution — which sees the pain of punishment as an end in and of itself — and incapacitation in that deterrence is anticipatory and forward looking while incapacitation is reactive. Deterrence arises out of the pain of punishment inflicted by law, and is generally considered to have two objectives, the so-called specific deterrent effect and the general deterrent effect. These two objectives differ in their targeting and typically are assessed using

different units of analysis. Specific deterrence focuses on the individual actor, while general deterrence focuses on the aggregate. An evaluation of the deterrent effect of a particular punishment (or the threat of a punishment) on an individual would measure the reduction in offending by that person. A general deterrent effect would be observed as a drop in the crime rate over the aggregate of individuals who are under the domain of that particular law.

Since deterrence is “forward looking” and seeks to prevent criminal behavior, it intrinsically involves the notion of risk. A person can only be deterred from a crime by a complex consideration of the relative risks and rewards of a particular crime. Thus, deterrence is always imperfect, since it involves prediction of an outcome that cannot be known with certainty. In addition, it is clearly the perception of risk that is critical in forming intent to commit a crime or desist from criminal behavior. If one assumes that the perceptual mechanisms are functioning appropriately (that there are shared social perceptions of risks and rewards), then the evaluation of risk is based on a calculation involving several elements or variables. These are variations on the context variables identified by Bentham as the basis for the assessment of pleasure or pain. Within criminology the most important of these are certainty (the degree to which the person believes the authorities will detect and respond to the act) and celerity or propinquity (that the time between the act and the response will be short, therefore little time will be had to enjoy the reward of the behavior or avoid punishment). The severity of punishments were to be meted out in relation to the pleasures or social harms associated with the crime — the measure of punishment being defined by the amount of pain necessary to negate the pleasure gain from the criminal act. The principle of equity is also at play in that the punishment is determined by the nature of the act and not the nature of the actor. The social status of the person does not play a role in determining the nature of the punishment, but solely the nature of the crime itself.

These fundamental properties of deterrence are largely identified with the classical school in criminology (Bentham and Beccaria), and in Beccaria’s work “On Crimes and Punishments” were summarized as the cornerstone of an equitable and effective criminal justice system. Tied to a belief in the fundamental rationality of humankind, this model would in almost all cases expect that a rational offender will be deterred from criminality because it would always engender a higher cost than gain. This deterrent effect would operate directly on the individual (specific) as well by example on the society as a whole (general). Only the irrational, viewed effectively as “insane,” would be exempt from this governor of behavior. Careful calibration of crimes and pleasures would deter all others.

## **THEORETICAL ROOTS OF LABELING**

*Labeling*, as the term is used in criminology, is a theoretical paradigm that is a complex amalgamation of philosophical, sociological, and psychological dimensions primarily concerned with the organization and influences of perception on action (Lemert, 1951, 1967). It considers how meaning is attached to perception, and how a series of perceptions and their associated meaning is organized into a coherent set of abstract forms and expectations that then constitute or influence the basis of human social and psychological activity. Labeling is primarily concerned with the negative consequences that come from classifying — via language — human actors as “criminals,” “deviants,” or similar pejoratives and how these labels then shape the person’s future behavior. It incorporates elements of symbolic interactionism — how social exchange itself forms realities and identities in the spirit of Mead’s (1934) *Mind, Self, & Society* — and power theory.

Power theory is incorporated into labeling because the creation and meaningful application of specific labels have varying consequences to the extent that institutions of power are the creators of the labels. In effect, not all labelers can create equivalent consequences for the labeled. The reification of a criminal identity, for example, has greater consequences to the extent an institution of power, such as the criminal justice system, is the creator of a label, as compared to a neighbor or casual acquaintance. Thus, labeling’s criminological ideas come from phenomenology, and much of its language is found particularly in interactionist perspectives within sociology. It also has applications in various conflict and power theories.

Labeling as it applies to criminology is best thought of as a perspective that is infused into a variety of criminological theories. In its most radical form, it can be seen as essentially a postmodernist perspective that largely rejects what has often been called the “received view” that an empirical and objective reality can be ascertained and described without regard to the orientation of the perceiver. Postmodern and associated labeling theories generally do recognize that some components of the physical world are imposed or “objective” (and cannot be modified by perception). However, the meaning attached to these empirical experiences is not contained within the experiences themselves, but rather in the interpretation of those experiences. While objective conditions may be recognized as existing, notably in the physical world, the meaning of these objective conditions arises from their perception, context, and other interpretative dynamics. Since a great deal of human life occurs within social and psychological contexts, the phenomenological aspects of labeling cannot be dismissed as sophistry, which some critics have done.

It is also important to mention that labeling is distinct from, yet similar to, the rational choice perspective. Essentially, labeling theory adds a layer of complexity to the rational choice perspective by focusing on how individuals respond to and internalize identities that



are applied to them by others. This response often can be counterproductive, or, in other words, law and social control have the potential to backfire due to labeling effects, which is unique from what Hobbesian thinkers would theorize. More specifically, labeling in criminology typically combines both power perspectives and phenomenological perspectives, and can be seen as, in some sense, a tautological dynamic system. In some ways both of these perspectives can be integrated, but at times the different emphasis (alternately on power or on phenomenon) can create very distinct and opposed ideas of the nature of crime.

Labeling, and the related stigmatization, can have deleterious effects on certain segments of the population such as drug users as it may negatively influence their willingness to seek or attend drug treatment or mental health services or gain access to healthcare. Furthermore, this stigma can adversely affect the perceptions of community members toward harm reduction strategies, including needle exchanges or safe drug consumption areas, because community members may perceive these approaches as promoting drug use rather than prioritizing treatment or prevention (Joyce, Sklenar, & Weatherby, 2019). In addition, the racial bias and disparities in drug-related criminal justice involvement continues to plague socially disadvantaged and minority communities (Rosenberg, Groves, & Blankenship, 2017). Without addressing these injustices surrounding systemic problems related to poverty and a lack of employment opportunities for these communities, labeling and stigmatization will continue to disproportionately affect these communities.

### *Power Perspective*

The power perspective, as it involves criminological labeling, adds the dimension of consequence. If one accepts that perceptions themselves lack intrinsic meanings (and meaning comes from the integration of these perspectives into a coherent “narrative” of the world), the power perspective notes that not all constructed narratives carry the same consequences. Some come to have more power than others and are thus deterministic of what constitutes reality. Power theory added to labeling focuses on how any activity is organized and then infused with meaning that has a consequence for all members of a society.

Thus, it can be said that no act is intrinsically criminal. Criminal acts come to be labeled as such because of the context in which they occur, and the meaning is associated with the activity and its context. Those who control this process of contextualization are the determiners of what is criminal. Meaning is constructed and then imbued into activity, but not all meanings have the same weight, consequences, or validity. For example, homicide — an objective act — may be criminal (in a robbery attempt) or may be honored (in warfare). This is a relativist theory of moral or criminal conduct that is malleable and for which the concept of absolute evil is greatly reduced, if not entirely absent.

### *Phenomenological Approach*

Philosophically, labeling arises out of phenomenology. Phenomenology as a philosophy is concerned with the nature of consciousness, how the experience of the conscious is organized, and how meaning is derived from or arises from the experiences of perception and sensation. Phenomenology is itself not an entirely unified philosophical perspective. The basic ideas on phenomenology as applied to social experience are associated with a nominalist view of the social world. This influence, the shaping of reality of perception and organizing acts of perception into a coherent system, leads to constructionist ideas of social reality.

The phenomenological approach to labeling that is also relatively well established is in social constructionist ideas of crime on the aggregate level. The aggregate level of social construction focuses on the reification of social institutions and the concepts of order and meaning that are gleaned through socialization. For criminological purposes, for example, the concept of a “criminal justice system” is a reified social institution — in effect, a separate reality. It is passed on generationally; it consists of physical structures and an aggregation of individuals, it is spoken of as an objectified entity, and so on.

This dynamic can be extended to both individuals and aggregations; in criminology this has been vigorously applied to subcultural groups. This is especially of interest in criminology since much of criminality is analyzed in reference to the power of organized criminality and the developmental influences that crime-prone organizations have on developing criminal definitions within the individual. Indeed, one of the most practical implications of labeling theory is the degree to which identity can coalesce around criminal group life. Ultimately, the labeling perspective in criminology can be summarized as a theoretical framework for explaining crime and criminal law and the notion of the label “criminals” itself as a direct result of social construction. Furthermore, those individuals who create these labels can be in positions of power, and those that are labeled can respond to this negative labeling process by developing and internationalizing deviant identities.

## **Theory for Legal Epidemiology**

Recognizing that there is a considerable amount of geographical variability and complexity in how laws and legal practices affect populations, it is not possible to develop a “one size fits all” schematic design. Nevertheless, it is possible to categorize and depict two causal diagrams (one diagram from a deterrence theory framework and one diagram from a labeling theory framework) when there is some degree of communality in the process of how laws and legal practices affect population-based public health outcomes. These two theoretically distinct yet complementary causal diagrams are shown in Figures 5.1 and 5.2, in which the independent

variables on the left side of the causal diagrams can generally be considered as laws, actions of legal agents, or both, and the dependent variables on the right side can be any of a number of population-based public health outcomes. However, relationships between laws and legal practices and population-based public health outcomes are not necessarily this direct or parsimonious. Rather, a series of key mediators plays a role in how this relationship occurs. Following a description of these two causal diagrams, a theoretically integrated causal diagram meshing deterrence and labeling theories is also presented.

### **DETERRENCE THEORY CAUSAL DIAGRAM**

The first path of the deterrence-based causal diagram (path A in Figure 5.1) assumes that individuals make rational choices about behavior. The rational criminal actor is assumed to be guided by a utilitarian assessment of pain and pleasure, which forms the basis of legal deterrence (path B). Paths C and C' represent the two distinct forms of deterrence-based laws and legal practices: general deterrence or specific deterrence. Paths D and D' depict the operation of these two distinct forms of deterrence: general-deterrence-based laws and legal practices target an aggregate-level unit of analysis (speed limit signs aimed at all drivers), whereas specific deterrence-based laws and legal practices target specific individuals as the unit of analysis (electronic monitoring devices ordered for individual offenders).

Paths E and E' and F and F' represent the key mediators in the causal chain between deterrence-based laws and legal practices and population-based public health outcomes. Specifically, paths E and E' signify that both direct and indirect forms of exposure to deterrence-relevant processes can ultimately affect behavior, and it is possible that these two modes of deterrence (aggregate-level and individual-level) can operate simultaneously (Stafford & Warr, 1993) and be considered as a feedback loop. That is, direct personal experience of being pulled over by the police or arrested affects that person. In addition, the direct experience of particular individuals affects others when they witness the experiences of others or hear about enforcement or punishment actions through other secondary or tertiary communication channels such as the media. Finally, just as deterrence effects on individuals can shape social diffusion to the population, the degree of general deterrence can shape how individuals respond to threats of punishments.

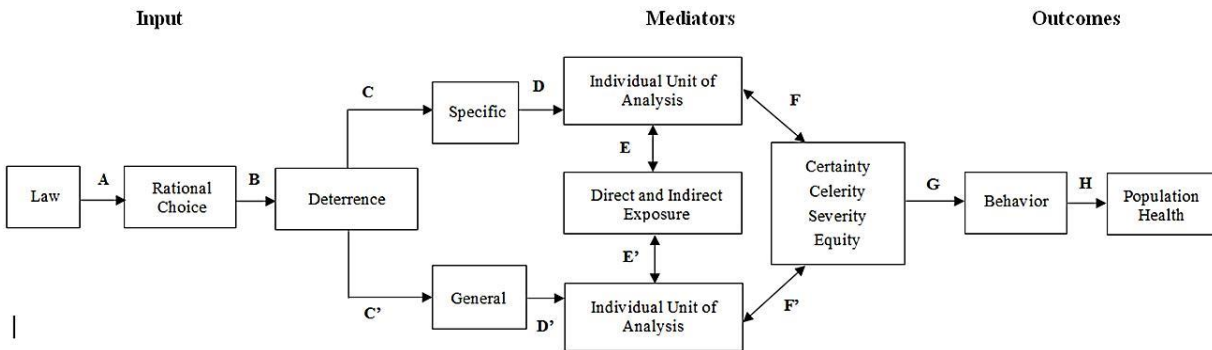


Figure 5.1. Deterrence Theory.

Although paths E and E' are categorized as important mediators in the relationship between deterrence-based laws and legal practices and population-based public health outcomes, their roles are affected by the variability in the core deterrence-based theoretical components of certainty, celerity, severity, and equity. Behavior is affected along path G by the degree to which people believe that: (1) legal authorities will detect and respond to the crime (certainty); (2) time between the crime and the non-pleasurable punishing response will be short (celerity); (3) punishment for harm associated with the crime outweighs the pleasure involved in the commission of the crime (severity); and (4) punishment is determined by the nature of the act, not the nature of the actor (equity). Note that the notion of equity may also be conceived as a moral principle guiding the operations of punishment rather than deterrence.

The relative strengths of effect of certainty, celerity, severity, and equity on behavior is not fully known. Neither is exactly how the four components interact to synergistically increase or diminish effects. The death penalty lacks celerity but is viewed as having the ultimate degree of severity and is presumed to influence an individual's decision to commit homicide and to deter homicides in the aggregate among members of the general population. Nevertheless, the subject of the death penalty remains controversial among researchers and policy makers, particularly concerning its relative ineffectiveness as a mechanism for realizing deterrence without preventing a deleterious side effect, brutalization. In summary, deterrence-based laws and legal practices ultimately affect population-based public health outcomes, such as violence (path H), through a series of mediating mechanisms operating at the individual and aggregate levels of analysis.

### LABELING THEORY CAUSAL DIAGRAM

The first path of the labeling-based causal diagram (path A in Figure 5.2) indicates that laws and legal practices prescribe labels for criminal actors. For example, the word *delinquent* or *criminal* is a label that distinguishes the actor from *non-delinquents* or *non-criminals*. Path B

and B' represent two complementary, but distinct, labeling paradigms through which laws and legal practices can operate. In the power paradigm, the effect of the label is influenced by the consequence associated with the activity on which the label is applied. Labels emerging from laws and legal practices often differentially target groups with the least amount of power in society. For example, vagrancy is labeled a crime because the actors are predominantly poor and transient individuals with little to no power in comparison to those who are actively involved in the lawmaking. In contrast, path B', from the phenomenological paradigm, focuses on the reification of social institutions. Social institutions are created because of laws and legal practices that apply labels to different forms of behavior. For instance, special gang police units form because the label "gang" has been applied to individuals who are involved in a variety of "socially unacceptable" behaviors such as graffiti and violence and do so in a group context with an organizational structure.

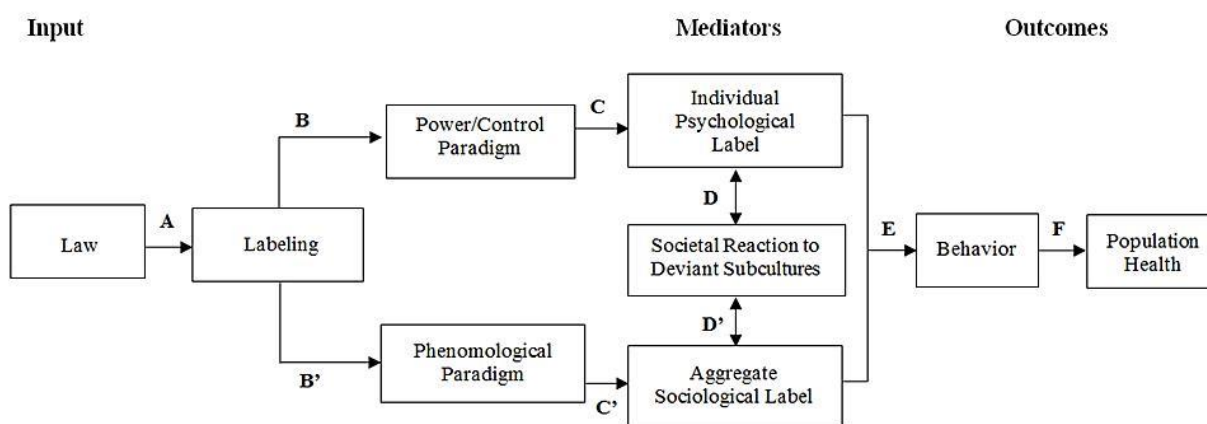


Figure 5.2. Labeling Theory.

Labeling can affect an individual's self-concept or identity (path C). This process has been succinctly characterized by American sociologist W. I. Thomas as a "situation defined as real is real in its consequences" (Thomas & Thomas, 1928, p. 572). The label applied from the external source becomes incorporated into one's self-identity. Thus, the label becomes a self-fulfilling process. For example, an individual has been labeled a deviant because he frequently gambles; therefore, he internalizes this label and continues to gamble because he has been labeled a deviant. Labeling also operates in the aggregate (path C'). For instance, a juvenile spending a great deal of time hanging out with her peers in an unsupervised capacity has been socially constructed as deviant in the sense that unstructured socializing is assumed to be a direct correlate for criminal behavior. Therefore, this behavior that has been socially constructed as deviant behavior has an effect on group behavior in the aggregate.

Although effects of labeling have been described separately for the individual and aggregate levels, it is important to acknowledge a possible feedback loop between social reaction to deviant subcultures (path D') and individual psychological labels (path D). For example, socially constructed labels can also possess power — sometimes great power. The expression of this is described in criminology as “societal reaction” — the label attached to persons, events, or institutions evokes specific responses from a general audience of observers. These observers then proceed to organize their beliefs and behaviors toward the labeled object in accordance with accepted and reified social constructs. Situations and persons, for example, may be perceived as threatening or comforting depending on a series of visible signs that are present to an observer. This is the process of labeling as a reactive state. Taken together, these mediating sociological and psychological mechanisms attenuate the relationship between the labeling that directly results from laws and legal practices (on the left side of Figure 5.2) and health-relevant behavior and, ultimately, population health.

### INTEGRATING DETERRENCE AND LABELING THEORY

While deterrence- and labeling-based theories of legal effects can be considered separately, and are at times diametrically opposed to one another, there is room for conceptual integration. First, in a theoretically integrated model, the left side of the causal diagram remains unchanged from the deterrence model. Specifically, path A (Figure 5.3) represents the link between laws and legal practices and deterrence (path B) via rational choice assumptions. The next phase of the causal diagram presenting the key mediators disaggregates deterrence into its individual-level form aimed at achieving specific deterrence (path C) and its aggregate-level form, in which the intention is general deterrence (path C').

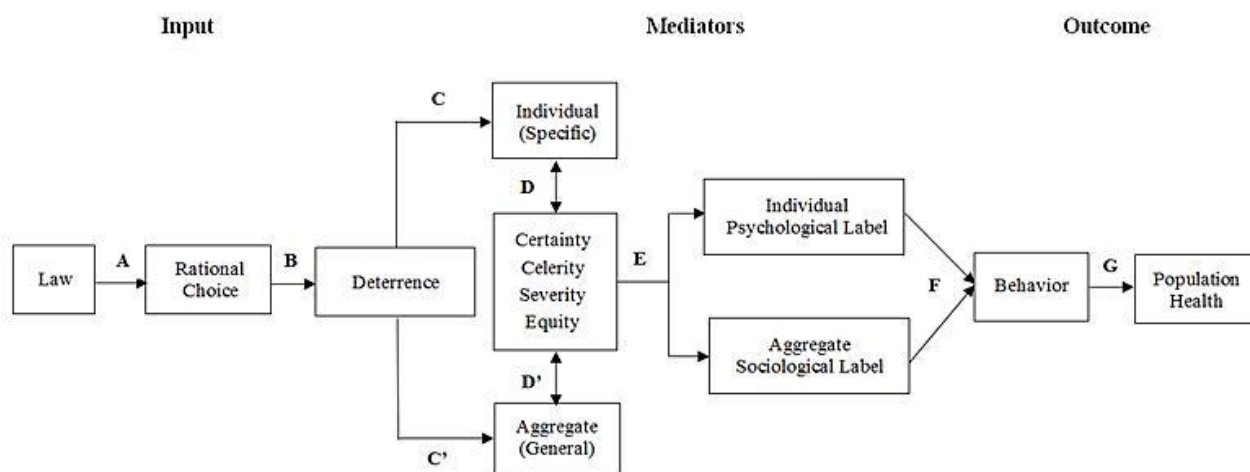


Figure 5.3. An Integrated Model from Criminology.

Acknowledging the possible varying levels of influence and application of the recursive components of deterrence theory exhibited in paths D and D' (certainty, celerity, severity, and equity), the next key mediating mechanism is drawn from the labeling perspective. Similar to the deterrence perspective, these mechanisms can operate at the individual psychological level or the aggregate sociological level (path E). Therefore, this integrated causal diagram is conditioned on the primacy of deterrence in laws and legal practices, yet this causal chain also permits the meditational effects of both deterrence and labeling concepts in ultimately affecting behavior (path F) and population public health outcomes (path G).

These effects are not necessarily operating in a purely linear fashion. The synergistic relationship between deterrence and labeling could be conceptually considered in relation to what regulatory researchers call the enforcement pyramid (Ayres & Braithwaite, 1995; Braithwaite, 2020). At the base are well-intentioned actors who are attempting to obey the law because they accept that as the right thing to do. Above them is a smaller group of “rational actors” who will obey because they calculate that the benefits of disobedience are lower than the costs of lawbreaking. At the top of the pyramid are a small group of bad actors who, for reasons of their own, are determined not to obey the law. These distinct types of actors require different regulatory strategies, and the key to regulatory efficiency is to apply the correct strategy or mix of strategies.

Actors disposed to obey the law require the least regulatory energy. The main thing is to make sure they know the correct course of action. Labeling, which tells them which activities are proscribed, may be enough in most cases to secure compliance. Rational actors, deterrence tells us, may need to be reminded that detection and punishment are available. When actors in the lower levels of the pyramid do break the rules, regulators initially can use relatively lighter sanctions — warnings, shaming, civil penalties — on the assumption that labeling or deterrence will be sufficient to get these actors back on the right track. If these base-of-the-pyramid strategies are not effective, then regulators can move up the pyramid to enforce more punitive strategies (license revocations, fines, and so on) with the ultimate and most severe deterrence strategy being at the peak of the pyramid (imprisonment or incapacitation). However, a synergistic process allows regulators to move up and down the pyramid with a number of enforcement options of varying degrees of punitiveness that theoretically would lead to favorable public health outcomes while avoiding deleterious effects of labeling and shaming.

## Measuring Deterrence and Labeling

Incorporating concepts from criminology when evaluating public health effects of law requires their measurement. In this section we review a few examples of how deterrence and labeling concepts have been measured for research.

### DETERRENCE

There is little argument that drinking and driving and its related motor vehicle crashes and fatalities still remain a significant public health concern (Wagenaar, Maldonado-Molina, Erikson, et al., 2007; Hadland et al., 2017). Therefore, it comes as no surprise that the application of legal sanctions for drinking and driving is widespread, and sanctions have been imposed for multiple purposes including deterrence, punishment, retribution, and incapacitation (Ross, 1982). As they relate to deterrence specifically, examples of legal sanctions for drinking and driving include fines, loss of license, jail time, and associated large-scale media campaigns publicizing the penalties and their enforcement (Freeman & Watson, 2006). Three studies in particular have examined the deterrent effects of penalties such as these at the individual level (specific deterrence) (Freeman & Watson, 2006; Piquero & Pogarsky, 2003) and aggregate level (general deterrence) (Wagenaar, Maldonado-Molina, Erikson, et al., 2007) that have broader relevance for legal epidemiology (see also Paternoster & Piquero, 1995; Piquero & Paternoster, 1998).

Using the following hypothetical vignette scenario among a large sample of college students, Piquero and Pogarsky investigated the deterrent effects of varying penalties and other components of deterrence (such as certainty and severity):

Suppose you drove by yourself one evening to meet some friends in a local bar. By the end of the evening, you've had enough drinks so that you're pretty sure your blood alcohol level is above the legal limit. Suppose that you live about 10 miles away and you have to be at work early the next morning. You can either drive home or find some other way home, but if you leave your car at the bar, you will have to return early the next morning to pick it up [Piquero & Pogarsky, 2003, pp. 162-163].

Regarding the certainty of punishment, the respondents answered the following question after being presented with the hypothetical scenario: "If you drove home under the circumstances described above, what is the chance (on a scale from 0 to 100) you would be pulled over by the police?" The severity of the punishment was assessed with the following question: "If you are convicted for drunk driving, you will not go to jail or receive a fine. However, your driver's license will be suspended for . . . [either one or twelve months]." Furthermore, Piquero and Pogarsky included measures of vicarious or indirect punishment experiences, which are also influential deterrence concepts (Stafford & Warr, 1993), by asking



the respondents to report the percentage of people they knew who had ever been charged with drunk driving and the percentage of people they think had driven while intoxicated on at least several occasions. Finally, the likelihood of committing the crime was measured by asking the respondents to estimate on a scale of 1 to 100 the likelihood they would drive home under the circumstances provided in the scenario above.

Freeman and Watson (2006) provide a replication and extension of Piquero and Pogarsky's work, in which they recruited 166 recidivist drunk drivers who were all participants in a court-appointed probation order for a drinking and driving offense. These researchers collected a variety of deterrence-relevant information measuring perceptions of legal sanctions, experiences with direct and indirect punishment, and perceptions of the severity and celerity of punishment. Items in Freeman and Watson's deterrence questionnaire include

- My penalties for drunk driving have been severe.
- I drink and drive regularly without being caught.
- My friends often drink and drive without being caught.
- Out of the next hundred people who drink and drive in Brisbane, how many do you think will be caught?
- The time between getting caught for drunk driving and going to court was very short.
- My friends have been caught and punished for drunk driving.
- The penalties I received for drunk driving have caused a considerable impact on my life.
- When I drink and drive I am worried that I might get caught.
- The chances of me being caught for drunk driving are high.
- It took a long time after I was caught by the police before I lost my license.

In contrast to the studies reviewed on individual-level deterrence, Wagenaar and colleagues (2007) provided an empirical examination of the general deterrent effects of statutory changes in DUI fine and jail penalties (that is, severity) on alcohol-related crashes in the aggregate across states. Results indicated that mandatory fines appeared to have a general deterrent effect, while mandatory jail sentences generally did not. These studies illustrate evaluations of deterrence-theory-based laws at either the individual level (specific deterrence) or the aggregate level (general deterrence).

There are a number of examples of how deterrence applies in areas other than drinking and driving. For example, speed limit signs are posted to deter drivers from exceeding a safe traveling speed. Speed limits operate as a specific deterrent process for drivers who have previously received a speeding ticket themselves, and as a general deterrent for drivers who have heard of others being caught and punished for exceeding the posted speed limit. The certainty, severity, and celerity of punishment and related fines, license suspensions, and so on all have an influence on the degree to which public health benefits of posting speed limit signs is realized.

Electronic monitoring devices for convicted offenders also have an inherent deterrent element. These devices make it difficult or impossible for monitored individuals to leave their homes or workplaces in order to offend. Assuming that these devices are properly operating and being monitored, any departure from the permitted area would result in an immediate alarm to the authorities (certainty). Following this alarm, the probation or parole officer normally would swiftly respond to the alarm (celerity), document violation of the offender's probation or parole, and return the offender to jail (severity).

Researchers have also begun to study relative weights of certainty, severity, and celerity in affecting deterrence. A number of examples of reliable and valid measurement tools and scales can be found in the following sources (Durlauf & Nagin, 2011; Nagin, 2010; Nagin & Pogarsky, 2001; Roche, Wilson, & Pickett, 2020). Furthermore, systematic reviews and meta-analyses provide helpful resources on how to measure elements of deterrence (Andrews, Zinger, Hoge, et al., 1990; Braga, Weisburd, & Turchan, 2018; Cullen, Pratt, Miceli, & Moon, 2002; Cullen, Wright, & Applegate, 1996; Howe & Brandau, 1988; Howe & Loftus, 1996; Klepper & Nagin, 1989; Nagin, 1998; Nagin & Pogarsky, 2001; Pratt & Cullen, 2005; Pratt, Cullen, Blevins, Daigle, & Madensen, 2006; Pusch & Holtfreter, 2021; Williams & Hawkins, 1986).

## **LABELING**

There can be little argument that sex offender registration and community notification provides one of the most identifiable and current examples of labeling in criminology. Although sex offender registration is not necessarily a new idea (Logan, 2009), the universal requirement for convicted sex offenders to register with law enforcement, have their identifying information posted on publicly accessible, Internet-based registries, and (at least in some jurisdictions) have community organizations and residents notified of their identities and residential locations (Terry & Ackerman, 2009) has presented a real-world experiment on the effects of such laws on population-based public health outcomes such as sexual violence.

A growing number of studies have begun to question the effectiveness of universal application of sex offender registration and community notification policies due to their misperception regarding sex offender specialization and recidivism (Bouffard & Askew, 2019; Zimring, Jennings, Piquero, & Hays, 2009; Zimring, Piquero, & Jennings, 2007). Furthermore, research has identified a number of collateral consequences for sex offenders as a direct result of having been labeled a “sex offender” and experiencing the associated negative and stigmatizing effects of this label. For example, Tewksbury (2005) collected information from a mailed survey administered to offenders listed on the Kentucky Sex Offender Registry and asked them about their experiences since becoming a registrant. There was a wide range of negative experiences reported, with the most common experiences including loss of job (43%); denial of promotion at work (23%); loss or denial of place to live (45%); treated rudely in a public place (39%); asked to leave a business (11%); lost a friend who found out about registration (55%); harassed in person (47%); assaulted (16%); received harassing or threatening telephone calls (28%); received harassing or threatening mail (25%).

Considering the prevalence of such negative experiences, reintegration and avoidance of long-term stigmatization among labeled and registered sex offenders might be difficult at best (Braithwaite, 1989). Furthermore, such negative experiences likely lead to a reduction in protective factors and a corresponding increase in risk factors for re-offending. Reducing re-offending probably requires creating conducive conditions for successful societal reintegration (Fox, 2017; McAlinden, 2006).

Laws on sex offender registration and community notification illustrate how a theoretically integrated model may be tested. The research question is whether these laws reduce rates of sexual violence (a population-based public health outcome) by providing a specific deterrent effect (preventing sexual violence recidivism among sex offenders) and a general deterrent effect (detering would-be first-time sex offenders) while avoiding unduly stigmatizing labeling effects and preventing registrants’ successful reintegration into society. Recent empirical evidence on sex offender registration and community notification laws suggests that deleterious consequences of the labeling effects of these laws may be exceeding the beneficial deterrence consequences (Call, 2018; Hamilton, 2020; Sandler, Freeman, & Socia, 2008; Schramm & Milloy, 1995; Tewksbury, 2005; Tewksbury & Jennings, 2010; Vasquez, Maddan, & Walker, 2008; Zgoba, Veysey, & Dalessandro, 2010).

## **Legal Epidemiology Research Challenges**

*Theory*, as the term is used in all social sciences including criminology, should be viewed with modesty and constraint, because, unlike in many physical sciences, theoretical ideas of

causation of crime and the quantitative and qualitative relationships between important concepts and constructs are not fully defined or measured. Operationalizing and measuring constructs related to human conduct are typically more ambiguous and more difficult than measuring constructs related to the physical world. Theory in criminology and the social sciences, as a consequence, is underdeveloped, suggesting cause-effect relationships without necessarily providing an ability to precisely predict prospectively.

There are inherent tensions between crime control and public health objectives that can present problems for legal epidemiology. Consider the tug-of-war between harm-reduction strategies and political incentives to appear tough on crime. “Get tough” measures such as drug crackdowns are often serious impediments to achieving beneficial crime control and public health objectives. Ultimately, scientists, practitioners, and lawmakers should make a more concerted effort in developing partnerships to design research programs addressing shared crime and public health issues, as well as implement effective laws and policies that strike a balance between crime control and public health objectives.

## Conclusion

This chapter described how theories and methods from the field of criminology, particularly deterrence and labeling theories, help explain how law influences behavior. Following a discussion of the effects of criminal and non-criminal laws and a review of theoretical frameworks for deterrence and labeling theories, we presented three causal diagrams that graphically depicted ways law can affect population health outcomes via the complex mediating mechanisms emerging from deterrence and labeling theories. Examples of ways to measure and empirically examine these concepts were also provided. Finally, we discussed the theoretical and methodological challenges that exist as well as offering a series of recommendations and directions for future research for those interested in examining public health effects of laws in light of prominent theories in criminology.

Relevant public health law and the research on its effects can both inform and be informed by criminology. This mutually beneficial relationship centers on how each discipline informs the theoretical thinking and empirical knowledge base upon which each relies to deepen their contributions to public life. For example, each discipline shares a concern for health in prospective thinking about policy. The very concept of deterrence in criminology is a prospective and preventive approach completely consistent with the public health concern with prevention. Ideally, policies directed at criminal behavior as well as unhealthy behaviors are most effective when they prevent negative effects rather than having to deal with corrective ex post facto actions. Furthermore, criminological ideas regarding labeling have important implications for generalized patterns of behavior that can be elements in prevention

policies. This is well illustrated by the labeling efforts directed at tobacco use as a public health concern. Labeling unhealthy and antisocial behaviors as unhealthy and undesirable are common mechanisms for both disciplines.

It is clear that the nexus between criminology and legal epidemiology extends beyond these abstract domains. Persons drawn into the criminal justice system bring with them serious public health issues. For instance, this population exhibits greater degrees of morbidity than the general population, and often is involved in higher rates of unhealthy behavior compared to the general public. They are also less likely to have any form of health insurance outside the general public assistance offered to the indigent. In sum, they offer special challenges to public health policy while simultaneously being potentially less tractable to the usual health delivery services available to citizens. In addition, offenders' motivation for a healthy lifestyle, perceptions of self-interest, and patterns of thought may be radically different from the typical population-wide patterns that public health practitioners often assume. As a result, there are many ways in which criminological theory, data, and research help advance public health law and improve population health outcomes. Finally, a long history of mistreatment, prejudice and social bias exacerbates criminal justice system involvement and associated public health consequences among racial and ethnic subpopulations. Elevating recognition of the role of such biases is central to effectively using criminological theories not only to advance public health but also to right systemic injustice.

### Further Reading

Braithwaite, J. (1989). *Crime, shame, and reintegration*. Cambridge: Cambridge University Press.

Nagin, D. S., Cullen, F. T., & Jonson, C. L. (Eds.). (2018). *Deterrence, Choice, and Crime, Volume 23: Contemporary Perspectives*. Routledge.

Yao, J., Xiao, T., & Hou, S. (2021). Risk perceptions and DUI decisions of drivers in different legal environments:

New evidence on differential deterrence from a Chinese sample. *Accident Analysis & Prevention, 157*, 106188.

Stafford, M., & Warr, M. (1993). A reconceptualization of general and specific deterrence. *Journal of Research in Crime and Delinquency, 30*(2), 123–135.

Wagenaar, A. C., Maldonado-Molina, M. M., Erickson, D. J., et al. (2007). General deterrence effects of U.S. statutory DUI fine and jail penalties: Long-term follow-up in 32 states. *Accident Analysis*

## References

- Akers, T. A., & Lanier, M. M. (2009). "Epidemiological criminology": Coming full circle. *American Journal of Public Health, 99*(3), 397–402.
- Akers, R.L., Sellers, C., & Jennings, W.G. (2020). *Criminological theories: Introduction, evaluation, and application* (8th ed.). Oxford and New York: Oxford University Press.
- Allen, S. T., Grieb, S. M., O'Rourke, A., Yoder, R., Planchet, E., White, R. H., & Sherman, S. G. (2019). Understanding the public health consequences of suspending a rural syringe services program: a qualitative study of the experiences of people who inject drugs. *Harm Reduction Journal, 16*, 1-10.
- Anderson, T. L., Donnelly, E. A., Delcher, C., & Wang, Y. (2021). Data science approaches in criminal justice and public health research: Lessons learned from opioid projects. *Journal of Contemporary Criminal Justice, 37*, 175-191.
- Andrews, D. A., Zinger, I., Hoge, R. D., et al. (1990). Does correctional treatment work? A clinically relevant and psychologically informed meta-analysis. *Criminology, 28*(3), 369–404.
- Ayres, I., & Braithwaite, J. (1995). *Responsive regulation: Transcending the deregulation debate*. New York; Oxford: Oxford University Press.
- Beccaria, C. (1764). On crimes and punishments. In J. E. Jacoby (Ed.), *Classics of criminology* (2nd ed.). Prospect Heights, IL: Waveland Press.
- Bentham, J. (1789). *Theory of legislation*. London: Paul, Trench, Trubner.
- Bouffard, J. A., & Askew, L. N. (2019). Time-series analyses of the impact of sex offender registration and notification law implementation and subsequent modifications on rates of sexual offenses. *Crime & Delinquency, 65*, 1483-1512.
- Braga, A. A., Weisburd, D., & Turchan, B. (2018). Focused deterrence strategies and crime control: An updated systematic review and meta-analysis of the empirical evidence. *Criminology & Public Policy, 17*, 205-250.
- Braithwaite, J. (1989). *Crime, shame, and reintegration*. Cambridge: Cambridge University Press.
- Braithwaite, J. (2020). Regulatory mix, collective efficacy, and crimes of the powerful. *Journal of White Collar and Corporate Crime, 1*, 62-71.
- Burris, S. (2006). From security to health. In J. Woods & B. Dupont (Eds.), *Democracy and the governance of security* (pp. 196–216). Cambridge: Cambridge University Press.
- Burris, S., Blankenship, K. M., Donoghoe, M., et al. (2004). Addressing the "risk environment" for injection drug users: The mysterious case of the missing cop. *The Milbank Quarterly, 82*(1), 125–156.
- Call, C. (2018). The community corrections perspective toward sex offender management policies and collateral consequences: does contact with sex offenders matter? *Criminal Justice Studies, 31*, 1-17.
- Cullen, F. T., Pratt, T. C., Miceli, S. L., & Moon, M. M. (2002). Dangerous liason? Rational choice theory as the basis for correctional intervention. In A. R. Piquero & S. Tibbetts (Eds.), *Rational choice and criminal behavior: Recent research and future challenges* (pp. 279–298). New York: Routledge.
- Cullen, F. T., Wright, J. P., & Applegate, B. K. (1996). Control in the community: The limits of reform? In A. T. Harland (Ed.), *Choosing correctional options that work: Defining the demand and evaluating the supply* (pp. 69–116). Thousand Oaks, CA: Sage.
- Davis, C. S., Burris, S., Kraut-Becher, J., Lynch, K. G., & Metzger, D. (2005). Effects of an intensive street-level police intervention on syringe exchange program use in Philadelphia, PA. *American Journal of Public Health, 95*(2), 233–236.

- Durlauf, S. N., & Nagin, D. S. (2011). Imprisonment and crime: Can both be reduced? *Criminology & Public Policy*, 10(1), 13–54
- Fox, K. J. (2017). Contextualizing the policy and pragmatics of reintegrating sex offenders. *Sexual Abuse*, 29, 28-50.
- Freeman, J., & Watson, B. (2006). An application of Stafford and Warr's reconceptualization of deterrence to a group of recidivist drink drivers. *Accident Analysis and Prevention*, 38(3), 462–471.
- Grinshteyn, E., & Hemenway, D. (2019). Violent death rates in the US compared to those of the other high-income countries, 2015. *Preventive Medicine*, 123, 20-26.
- Hadland, S. E., Xuan, Z., Sarda, V., Blanchette, J., Swahn, M. H., Heeren, T. C., ... & Naimi, T. S. (2017). Alcohol policies and alcohol-related motor vehicle crash fatalities among young people in the US. *Pediatrics*, 139, e20163037.
- Hamilton, E. (2020). Toward a focused conceptualization of collateral consequences among individuals who sexually offend: A systematic review. *Sexual Abuse*, doi:1079063220981906.
- Howe, E. S., & Brandau, C. J. (1988). Additive effects of certainty, severity, and celerity of punishment on judgments of crime deterrence scale value. *Journal of Applied Social Psychology*, 18(9), 796–812.
- Howe, E. S., & Loftus, T. C. (1996). Integration of certainty, severity, and celerity information in judged deterrence value: Further evidence and methodological equivalence. *Journal of Applied Social Psychology*, 26(3), 226–242.
- Joyce, M., Sklenar, E., & Weatherby, G. (2019). Decriminalizing drug addiction: The effects of the label. *MOJ Research Review*, 2, 83-91.
- Klepper, S., & Nagin, D. S. (1989). Certainty and severity of punishment revisited. *Criminology*, 27(4), 721–746.
- Lemert, E. M. (1951). *Social pathology*. New York: McGraw-Hill.
- Lemert, E. M. (1967). *Human deviance, social problems, and social control*. Englewood Cliffs, NJ: Prentice-Hall.
- McAlinden, A. M. (2006). Managing risk: From regulation to the reintegration of sex offenders. *Criminology and Criminal Justice*, 6(2), 197–218.
- Mead, G. H. (1934). *Mind, self, & society: From the standpoint of a social behaviorist* (Vol. 1). Chicago: University of Chicago Press.
- Meeker, D., Linder, J. A., Fox, C. R., Friedberg, M. W., Persell, S. D., Goldstein, N. J., Knight, T. K., Hay, J. W., & Doctor, J. N. (2016). Effect of behavioral interventions on inappropriate antibiotic prescribing among primary care practices: A randomized clinical trial. *JAMA*, 315(6), 562-570.
- Nagin, D. S. (1998). Criminal deterrence research at the outset of the twenty-first century. In M. Tonry (Ed.), *Crime and justice: A review of research* (Vol. 23, pp. 1–42). Chicago: University of Chicago Press.
- Nagin, D. S. (2010). Imprisonment and crime control: Building evidence-based policy. In R. Rosenfeld, K. Quinet, & C. Garcia (Eds.), *Contemporary issues in criminological theory and research: The role of social institutions*. Belmont, CA: Wadsworth.
- Nagin, D. S., & Pogarsky, G. (2001). Integrating celerity, impulsivity, and extralegal sanction threats into a model of general deterrence: Theory and evidence. *Criminology*, 39(4), 865–891.
- Paternoster, R., & Piquero, A. R. (1995). Reconceptualizing deterrence: An empirical test of personal and vicarious experiences. *Journal of Research in Crime and Delinquency*, 32(3), 251–286.
- Piquero, A. R., & Paternoster, R. (1998). An application of Stafford and Warr's reconceptualization of deterrence to drinking and driving. *Journal of Research in Crime and Delinquency*, 35(1), 3–39.

- Piquero, A. R., & Pogarsky, G. (2003). Can punishment encourage offending? Investigating the “resetting” effect. *Journal of Research in Crime and Delinquency*, 40(1), 95–120.
- Pratt, T. C., & Cullen, F. T. (2005). Assessing macro-level predictors and theories of crime: A meta-analysis. In M. Tonry (Ed.), *Crime and justice: A review of research* (Vol. 32, pp. 373–450). Chicago: University of Chicago Press.
- Pratt, T. C., Cullen, F. T., Blevins, K. R., Daigle, L. E., & Madensen, T. D. (2006). The empirical status of deterrence theory: A meta-analysis. In F. T. Cullen, J. P. Wright, & K. R. Blevins (Eds.), *Taking stock: The empirical status of criminological theory: Advances in criminological theory* (Vol. 15, pp. 367–395). New Brunswick, NJ: Transaction.
- Pusch, N., & Holtfreter, K. (2021). Individual and organizational predictors of white-collar crime: a meta-analysis. *Journal of White Collar and Corporate Crime*, 2, 5-23.
- Roche, S. P., Wilson, T., & Pickett, J. T. (2020). Perceived control, severity, certainty, and emotional fear: Testing an expanded model of deterrence. *Journal of Research in Crime and Delinquency*, 57, 493-531.
- Rosenberg, A., Groves, A. K., & Blankenship, K. M. (2017). Comparing Black and White drug offenders: Implications for racial disparities in criminal justice and reentry policy and programming. *Journal of Drug Issues*, 47, 132-142.
- Ross, H. L. (1982). Interrupted time series studies of deterrence and drinking and driving. In J. Hagan (Ed.), *Deterrence reconsidered: Methodological innovations* (pp. 89–100). Beverly Hills, CA: Sage.
- Sandler, J. C., Freeman, N. J., & Socia, K. M. (2008). Does a watched pot boil? A time series analysis of New York State’s sex offender registration and notification law. *Psychology, Public Policy and Law*, 14(4), 284–302.
- Schramm, D. D., & Milloy, C. D. (1995). *Community notification: A study of offender characteristics and recidivism* (95-10-1101). Seattle: Urban Policy Research.
- Stafford, M., & Warr, M. (1993). A reconceptualization of general and specific deterrence. *Journal of Research in Crime and Delinquency*, 30(2), 123–135.
- Terry, K. J., & Ackerman, A. R. (2009). A brief history of major sex offender laws. In R. G. Wright (Ed.), *Sex offender laws: Failed policies, new directions* (pp. 65–98). New York: Springer.
- Tewksbury, R. (2005). Collateral consequences of sex offender registration. *Journal of Contemporary Criminal Justice*, 21(1), 67–81.
- Tewksbury, R., & Jennings, W. G. (2010). Assessing the impact of sex offender registration and community notification on sex offending trajectories. *Criminal Justice and Behavior*, 37(5), 570–582.
- Thomas, W. I., & Thomas, D. S. (1928). *The child in America: Behavior problems and programs*. New York: Alfred A. Knopf.
- Vasquez, B. E., Maddan, S., & Walker, J. T. (2008). The influence of sex offender registration and notification laws in the United States: A time-series analysis. *Crime & Delinquency*, 54(2), 175–192.
- Wagenaar, A. C., Maldonado-Molina, M. M., Erickson, D. J., et al. (2007). General deterrence effects of U.S. statutory DUI fine and jail penalties: Long-term follow-up in 32 states. *Accident Analysis & Prevention*, 39(5), 982–994.
- Williams, K., & Hawkins, R. (1986). Perceptual research on general deterrence: A critical overview. *Law & Society Review*, 20(4), 545–572.
- Zgoba, K., Veysey, B., & Dalessandro, M. (2010). An analysis of the effectiveness of community notification and registration: Do the best intentions predict the best practices? *Justice Quarterly*, 27(5), 667–691.



Zimring, F., Jennings, W. G., Piquero, A. R., & Hays, S. (2009). Investigating the continuity of sex offending: Evidence from the second Philadelphia birth cohort. *Justice Quarterly*, 26(1), 58–76.

Zimring, F., Piquero, A. R., & Jennings, W. G. (2007). Sexual delinquency in Racine: Does early sex offending predict later sex offending in youth and adulthood? *Criminology and Public Policy*, 6(3), 507–534.