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## HOW MUCH DO WE REALLY KNOW ABOUT CRIMINAL DETERRENCE?

RAYMOND PATERNOSTER\*

*This Article discusses the deterrence of crime through sanctions. It begins with a brief intellectual history of deterrence theory in the work of Cesare Beccaria and Jeremy Bentham, two Enlightenment philosophers who created the conceptual foundation for later deterrence and rational choice theory. Although a prominent intellectual current by the end of the 1700s, interest in deterrence and rational choice based theories of criminal offending was later eclipsed by more biologically and psychologically based explanations. Interest in deterrence theory and the deterrent effect of legal sanctions was not rekindled until the mid-1960s. This Article discusses the particular and important role of the Journal of Criminal Law and Criminology in publishing the works of both those who were highly critical of deterrence theory and those who wished to keep it alive, though vividly aware of the lack of any empirical support for it. This Article discusses the theoretical connections that are presumed by the deterrence process and briefly reviews some important empirical studies pertaining to each of those presumed causal connections. The empirical evidence leads to the conclusion that there is a marginal deterrent effect for legal sanctions, but this conclusion must be swallowed with a hefty dose of caution and skepticism; it is very difficult to state with any precision how strong a deterrent effect the criminal justice system provides. At the very least, there is a great asymmetry between what is expected of the legal system through deterrence and what the system delivers. There is greater confidence that non-legal factors are more effective in securing compliance than legal threats. It is argued that the empirical evidence does support the belief that criminal offenders are rational actors, in that they are responsive to the incentives and disincentives associated with their actions, but that the criminal justice system, because of its delayed imposition of punishment, is not well constructed to exploit this rationality.*

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## I. INTRODUCTION

The concept of deterrence is quite simple—it is the omission of a criminal act because of the fear of sanctions or punishment. While not the entire premise, deterrence is certainly an important foundation of the criminal justice system. Law enforcement exists both to apprehend wrongdoers and to convince would-be wrongdoers that there is a risk of apprehension and punishment if they commit a crime. Laws that provide a host of different sanctions for the commission of criminal offenses (fines, probation, imprisonment) serve notice that criminal statutes contain a credible threat that—it is hoped—will inhibit those who have been punished from committing additional crimes (specific deterrence) and those who have not yet offended from committing crimes at all (general deterrence). Particular criminal justice policies such as police “crackdowns,” enhanced enforcement in and surveillance of high crime areas or “hot spots,” mandatory minimum sentences, sentencing enhancements for firearm possession, “three-strike” laws, and others are all enacted with the expectation that they will successfully engineer the crime rate down through deterring offenders and would-be offenders. It is reasonable to argue that a belief or expectation that sanction threats can deter crime is at the very heart of the criminal justice system.

In spite of its central importance, and the very high expectation we have that legal punishment and criminal justice policies can inhibit crime, we do not have very solid and credible empirical evidence that deterrence through the imposition of criminal sanctions works very well. While we have an abundance of research about specific police, judicial, and correctional policies, as well as more general theoretical work about deterrence mechanisms, the evidence to date, while suggesting that there is a deterrence return to all that we do about crime, is more than a little flimsy. In essence, while we can say that there likely is a deterrent effect to the workings of the criminal justice system,<sup>1</sup> it is difficult to determine how strong an effect it is and why that effect is not stronger than we might think it should be. This Article explores at least two very important reasons why the empirical evidence in support of criminal deterrence is so weak: (1) it is

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<sup>1</sup> It is easy enough to see that criminal deterrence frequently and effectively influences our actions. We all “throw out the anchor” on the highway when we spot a patrol car. We generally do not park in handicapped-only parking spots. We do not light up a joint at the movies. Burglars like to break into unoccupied homes. Drug deals are typically made in the shadows and not out in the open where police can see. But while we know that deterrence works in the absence of doing nothing about crime, we are decidedly less certain about relative or marginal deterrent effects. For example, does increasing the number of police officers reduce crime? Does adding three years to a prison sentence for the use of a gun deter firearm-related felonies? Does an increased use of incarceration deter crime better compared with previous levels of incarceration?

very difficult to isolate and measure a deterrent effect precisely because a great many things must happen before deterrence can occur; (2) it just may be very difficult to generate strong deterrent effects through the legal system because the system is unable to exploit human rationality effectively. This Article examines selective features of the empirical deterrence terrain (more comprehensive reviews of the literature are both abundant and recent) with the intention of providing a glimpse of what we know about criminal deterrence and how our knowledge is very imprecise, how difficult it is to come by that knowledge, and what features of the legal system and its delivery of sanctions, and of people may contribute to our lack of precise knowledge about deterrence.

The Article begins with a brief intellectual history of deterrence and the role of the *Journal of Criminal Law and Criminology* in that history. The following section discusses the causal mechanisms that define how the process of deterrence works. This causal process links the workings of the criminal justice system (the objective properties of punishment) to the perceptual properties of punishment held by individuals to crime and, in turn, both of these properties of punishment to crime. A causal effect of deterrence requires that each of the three links in this chain be present. Subsequent sections briefly review selected empirical studies about each one of the necessary causal connections in deterrence. The Article concludes with a more speculative discussion about what it is about the criminal justice system and about human beings that contributes to the generally weak, generally imprecise empirical support for criminal deterrence through legal sanctions.

## II. A BRIEF INTELLECTUAL HISTORY OF DETERRENCE THEORY IN CRIMINOLOGY

### A. INTELLECTUAL ROOTS

There are two standard, but nonetheless productive, sources to consult for an understanding of the intellectual history of deterrence theory. The first is an essay, *On Crimes and Punishments (On Crimes)*, written in 1764 by the Enlightenment philosopher Cesare Beccaria,<sup>2</sup> and the second is Jeremy Bentham's *An Introduction to the Principles of Morals and Legislation (Introduction to the Principles)*, published in 1789.<sup>3</sup> Although Beccaria is often cited as the founder of the classical school of criminology,

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<sup>2</sup> CESARE BECCARIA, *ON CRIMES AND PUNISHMENTS* (Henry Paolucci trans., Macmillan 1986) (1764).

<sup>3</sup> JEREMY BENTHAM, *THE PRINCIPLES OF MORALS AND LEGISLATION* (Prometheus Books 1988) (1789).

*On Crimes* does not really contain a fully developed theory of crime as much as Bentham's does. Beccaria's *On Crimes* is best thought of as a collection of principles that an enlightened ruler might use to make the administration of his legal system more systematically rational and therefore, Beccaria would argue, efficient.<sup>4</sup> Nevertheless, the essay does contain discussions about the characteristics of punishment that form the foundation of deterrence theory.<sup>5</sup> Bentham's *Introduction to the Principles* contains a more fully articulated theory of crime that provides a better foundation for a rational choice theory of crime.<sup>6</sup>

*On Crimes* begins by clearly describing Beccaria's purpose—not to question authority, but to make the exercise of authority more rational:

Whoever might wish to honor me with his criticism should therefore begin by understanding clearly the design of this work, a design which, far from diminishing legitimate authority, must serve to increase it, if reasoning rather than force can prevail among men, and if benevolence and humanity justify it in the eyes of all.<sup>7</sup>

Beccaria was an Enlightenment thinker who was repulsed by the cruelty and barbarism of the legal codes under the *anciens regimes* throughout Europe.<sup>8</sup> These codes allowed such practices as secret accusations, torture, convictions without trial, and a host of not only cruel but disparate punishments.<sup>9</sup> These practices were offensive to Beccaria because their irrationality made them ineffective for crime control.<sup>10</sup> What Beccaria proposed in their place was a corpus of principles for authorities to follow that would make their rule more rational and, therefore, more effective.<sup>11</sup> He proposed a system of legal reforms that included clearly written laws, a restrained judiciary, the abolishment of torture and secret accusations, and a proportionality between the harm produced by the crime and the amount of punishment visited upon the offender.<sup>12</sup>

Beccaria argued that the motivation to commit crime was found in ubiquitous self-interest, which he referred to as “the despotic spirit[] *which is in every man,*”<sup>13</sup> and that the “tangible motives”<sup>14</sup> to commit crime had to be countered by punishments. But the power of the sovereign is not

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<sup>4</sup> See BECCARIA, *supra* note 2.

<sup>5</sup> *Id.* at 10-13.

<sup>6</sup> BENTHAM, *supra* note 3.

<sup>7</sup> BECCARIA, *supra* note 2, at 4.

<sup>8</sup> *Id.* at 3-4.

<sup>9</sup> See *id.* at 17-20, 25-28.

<sup>10</sup> *Id.* at 8-9.

<sup>11</sup> *Id.* at 17-19.

<sup>12</sup> *Id.* at 93-99.

<sup>13</sup> *Id.* at 12 (emphasis added).

<sup>14</sup> *Id.*

limitless; instead, the authority of the sovereign is premised on the consent of the governed—the social contract in Enlightenment terms—wherein each person surrenders only a limited part of his or her freedom in exchange for protection against others who would harm him or her.<sup>15</sup> In Chapter 23 of *On Crimes*, Beccaria argued that punishment must be proportionate to the crime: crimes that cause the greatest damage to society should be punished the most severely, and the least serious crimes should result in the least painful punishments.<sup>16</sup>

Even before this, however, Beccaria presented (in Chapter 20) a proposition that has been axiomatic in deterrence theory ever since. Certain punishment is a much more effective deterrent than severe punishment:

One of the greatest curbs on crimes is not the cruelty of punishments, but their infallibility . . . . The certainty of a punishment, even if it be moderate, will always make a stronger impression than the fear of another which is more terrible but combined with the hope of impunity; even the least evils, when they are certain, always terrify men's minds . . . .<sup>17</sup>

He argued that punishments that are certain, severe enough to sufficiently offset the anticipated gains of crime, and arrive immediately after the crime would make for a more effective legal system than the system that existed at the time, which combined great cruelty and the seemingly random exercise of mercy.<sup>18</sup> Very much the original deterrence theorist, Beccaria's position was that the self-interest to commit crime has to be thwarted by legal punishment that is certain, proportional, and swift.<sup>19</sup>

In the penultimate chapter of *On Crimes*, Beccaria made an interesting observation that is returned to at the end of this Article. Chapter 41 is entitled "How to Prevent Crimes," and Beccaria began this chapter with the observation that "[i]t is better to prevent crimes than to punish them."<sup>20</sup> Of course, the reader could not be blamed for thinking that after forty chapters he had already fully explained how crimes can be prevented—crime can be deterred by the threats provided by a rational and efficient legal system of punishment, the structure of which makes up the first forty chapters of *On Crimes*. While Beccaria believed, without a doubt, that clearly defined laws that enjoy a great deal of consensus, are enforced equally, and are associated with certain and measured punishment could secure compliance, he also seemed keenly aware of the limitations of the legal system in the

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<sup>15</sup> *Id.* at 12-13.

<sup>16</sup> *Id.* at 62-64.

<sup>17</sup> *Id.* at 58.

<sup>18</sup> *Id.* at 58-59.

<sup>19</sup> *Id.* at 46-47, 55-57, 62-64.

<sup>20</sup> *Id.* at 93.

prevention of most crime.<sup>21</sup> He argued that “the surest but most difficult way to prevent crimes is by perfecting education,” by which he meant moral education or self-restraint—education on virtue.<sup>22</sup> Education allows individuals to avoid evil by enabling them to make better choices rather than securing their compliance through punishment, “which obtains only simulated and momentary obedience.”<sup>23</sup> In terms of creating the conditions for maximum freedom and minimum evil (by both crime and punishment), Beccaria, in the end, seemed to appeal more to Rousseau’s *Emile*<sup>24</sup> than to Bentham’s *Panopticon*.<sup>25</sup>

While *On Crimes* provides the enlightened authority with practical policies to make legal systems more rational and efficient, it is thin with respect to any developed theory of crime or criminal conduct. Beccaria provided no real theory of behavior other than that crime is driven by self-interest, which resides in everyone. Bentham, however, offered a more developed intellectual source for deterrence theory’s model of human conduct. It is in Bentham where one finds the notion of utility as the weighted balance between two opposing considerations—pleasure (benefits) and pain (costs)—that is the guide to conduct.<sup>26</sup> In the very first paragraph of *Introduction to the Principles*, Bentham argued that human behavior is directed by the twin goals of the attainment of pleasure and the avoidance of pain: “Nature has placed mankind under the governance of two sovereign masters, *pain* and *pleasure*. It is for them alone to point out what we ought to do, as well as to determine what we shall do.”<sup>27</sup> The “masters” of pleasure and pain operate through the principle of utility—actions that bring pleasure provide utility, and those that bring pain provide disutility. The happiness of the individual is maximized when the sum total of their actions brings them more utility than disutility, and the self-interested individual is presumed to behave in such a way as to maximize his individual utility.<sup>28</sup> In talking about the general inclination to action in later chapters of *Introduction to the Principles*, Bentham stated in Chapter 3:

Sum up all the values of all the pleasures on the one side, and those of all the pains on the other. The balance, if it be on the side of pleasure, will give the good tendency of

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<sup>21</sup> *Id.* at 93-99.

<sup>22</sup> *Id.* at 98.

<sup>23</sup> *Id.* at 99.

<sup>24</sup> JEAN JACQUES ROUSSEAU, *EMILE: OR ON EDUCATION* (Dartmouth Coll. Press 2010) (1762).

<sup>25</sup> JEREMY BENTHAM, *PANOPTICON* (1787).

<sup>26</sup> BENTHAM, *supra* note 3, at 1.

<sup>27</sup> *Id.*

<sup>28</sup> *Id.* at 31.

the act upon the whole, with respect to the interests of that individual person; if on the side of pain, the bad tendency of it upon the whole.<sup>29</sup>

In Chapter 7, he explained that “[t]he general tendency of an act is more or less pernicious, according to the sum total of its consequences: that is, according to the difference between the sum of such as are good, and the sum of such as are evil.”<sup>30</sup> Utility for individuals, then, is the net difference between the benefits and costs of actions; among alternative courses of action, the individual will choose that which has the greater sum of benefits over costs.

In subsequent chapters, Bentham discussed the characteristics of pleasure and pain and, in the process, developed a theory much broader in scope than a strict version of deterrence theory<sup>31</sup>—a theory that resembles what a century later would be called rational choice theory in criminology.<sup>32</sup> He stated in Chapter 3 that there are four general sources of pleasure and pain: (1) physical, (2) political, (3) moral or popular, and (4) religious.<sup>33</sup> With respect to crime, an example of physical pleasure would be the feeling of exhilaration or “high” one gets from using drugs; an example of physical pain would be getting shot by a homeowner when trying to break into her house at night. Political pain would include the stock of legal sanctions used by authorities. Examples of the moral or popular pleasure and pain of criminal conduct include, respectively, the sense of prestige and reputation that one might get from some as a result of being involved in crime and the blast of censure and approbation received from more conventional others. Religious pleasure consists of the sense of a rewarded afterlife for good conduct, and the pain consists of the anticipation of damnation.

As one can see, in discussing this very diverse variety of pleasures and pains that ultimately determine the utility of one’s actions, Bentham developed a substantially more general theory of behavior in *Introduction to the Principles* than Beccaria did in *On Crimes*. In addition to the pains presented by legal punishments, Bentham’s theory includes a host of informal sanctions, imposed by the self and social others, in addition to a wide consideration of the specific pleasures that can be experienced by criminal behavior not under the direct control of legal authorities.<sup>34</sup> In addition to the different types or sources of pain and pleasure, Bentham

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<sup>29</sup> *Id.* (emphasis omitted).

<sup>30</sup> *Id.* at 70.

<sup>31</sup> *See generally id.* at 97-130.

<sup>32</sup> *See generally* THE REASONING CRIMINAL: RATIONAL CHOICE PERSPECTIVES ON OFFENDING (Derek B. Cornish & Ronald V. Clarke eds., 1986).

<sup>33</sup> BENTHAM, *supra* note 3, at 25.

<sup>34</sup> *See id.* at 24-42.

argued that there is an important variation in several characteristics—or their elements or dimensions—including intensity, duration, certainty, propinquity, fecundity, and purity.<sup>35</sup> Later, in Chapter 5 of *Introduction to the Principles*, Bentham provided a comprehensive list of the specific kinds of pleasures (the pleasures of the senses, a good reputation, wealth) and pains (physical pains, being poor, having an ill reputation).<sup>36</sup> At the end of Chapter 5, Bentham remarked, with respect to crime specifically, that the inclination to offend consists of a desire to attain the above pleasures and avoid the pains and that the punishment of the offender is inflicted, and is justified in being inflicted, by imposing one or more of the pains.<sup>37</sup> Finally, while it is clear that he had no well-developed understanding of psychology, in Chapter 6 Bentham implied that the pleasures and pains that are the important determinants of utility, and therefore behavior, are those that are seen by the individual and not necessarily those that objectively exist: “[p]ain and pleasure *are produced in men’s minds* by the action of certain causes. But the quantity of pleasure and pain runs not uniformly in proportion to the cause; in other words, to the quantity of force exerted by such cause.”<sup>38</sup>

In spite of what (for the times) was a fairly well-developed theory that explained the cause of crime, what the reaction or response to crime should be, and how those reactions or responses should be apportioned, when the profession of criminology initially developed, it did not build its foundation upon the works of either Beccaria or Bentham, but on the biological/psychological model of psychiatrists like Pinel, Pritchard, and Rush, who all believed that criminal behavior was more likely to be the result of a pathological mind than anything else and that such a pathology affected only a minority of persons.<sup>39</sup> From an early emphasis on criminality due to individual conditions, such as moral insanity, it was but a short-step to criminal anthropologists’ concepts of atavism, degeneration, and feeble-mindedness.<sup>40</sup> This movement of the study of crime from the more philosophical works of Beccaria and Bentham to biological positivism was due to several sources including the growing influence of natural science (Darwin’s *On the Origin of Species* was published in 1859<sup>41</sup>), the prestige of the medical profession, and the political advantages of a view of

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<sup>35</sup> *Id.* at 29-32.

<sup>36</sup> *Id.* at 33-42.

<sup>37</sup> *Id.* at 41.

<sup>38</sup> *Id.* at 43 (emphasis added).

<sup>39</sup> NICOLE RAFTER, *THE CRIMINAL BRAIN: UNDERSTANDING BIOLOGICAL THEORIES OF CRIME* 19-21 (2008).

<sup>40</sup> *Id.* at 65-70.

<sup>41</sup> CHARLES DARWIN, *ON THE ORIGIN OF SPECIES* (Penguin 2003) (1859).

crime that attributed its causes to individual pathology rather than some defect of the political or social system.<sup>42</sup> Whatever the appeal of the biological positivists, criminology would turn its back for nearly two centuries on deterrence theory, as well as the more general idea that the motivation to commit crime was something that everyone possessed and that crime, like any other human activity, was rational and motivated by considerations of utility.

#### B. RESURRECTION OF DETERRENCE THEORY

Over the years, the *Journal of Criminal Law and Criminology* (*Journal*) has played a prominent role in both helping to bury deterrence theory and later reviving it. The general ill-repute in which deterrence theory was held in the field of criminology before the mid-twentieth century was nicely captured in an article by Hans von Hentig that appeared in the *Journal* in 1938.<sup>43</sup> Von Hentig, a former associate editor of the *Journal*, argued that there are large groups of persons who are simply immune to the deterrence-like threats of the law including those motivated by love or maternal instincts, the young and women who tend to be impetuous, those motivated by ideology, the “have-nots,” and the feeble-minded.<sup>44</sup> According to von Hentig, Bentham’s belief that persons are moved by the consequences of their actions, the pursuit of pleasure and avoidance of pain, “appear[s] to be unreal and simple-minded, when we think of the enormous multiformity and complication of life.”<sup>45</sup> To von Hentig, as to most criminologists at the time and even later, something so complicated and serious as crime requires an equally complicated and serious answer.<sup>46</sup> These criminologists believed that, in order to deal with crime on the policy level, one must first take a comprehensive study of the individual offender to discover what factors or forces are operating to produce him. Only through the scientific study of the individual offender can we develop a sense of the complex causal factors in crime, which is necessary before we can begin to deal with them. In making a more general criticism of deterrence theory, von Hentig made a very insightful point that is returned to in the conclusion of this Article. According to von Hentig, deterrence is doomed to fail because the pleasure of committing a criminal act is a “near object” while the cost provided by the legal system is a “long-distance

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<sup>42</sup> IAN TAYLOR, PAUL WALTON & JOCK YOUNG, *THE NEW CRIMINOLOGY: FOR A SOCIAL THEORY OF DEVIANCE* 38-40 (1973).

<sup>43</sup> Hans von Hentig, *The Limits of Deterrence*, 29 J. AM. INST. CRIM. L. & CRIMINOLOGY 555 (1938).

<sup>44</sup> *Id.* at 557-60.

<sup>45</sup> *Id.* at 560.

<sup>46</sup> *Id.* at 561.

danger,” very much in the remote future and therefore unable to offset the more immediate advantages of crime.<sup>47</sup>

Two other articles in the *Journal* made arguments conceptually similar to von Hentig’s that were in opposition to the use of punishment to deter wrongdoing and secure compliance with rules. In his article entitled “Is Punishment Necessary?,” Jackson Toby took a position that was characteristic of many criminologists and sociologists of his time.<sup>48</sup> According to Toby, the use of punishment to create conformity through deterrence is not necessary because “[t]he socialization process prevents most deviant behavior. . . [and] [o]nly the unsocialized (and therefore amoral) individual fits the model of classical criminology and is deterred from expressing deviant impulses by a nice calculation of pleasures and punishments.”<sup>49</sup> While punishment in the Durkheimian sense of strengthening the moral convictions of citizens is necessary, punishment in order to deter cannot hold much promise.<sup>50</sup> Much the same position was taken from a psychological perspective just one year later by James B. Appel and Neil J. Peterson.<sup>51</sup> They argued that psychological learning principles are inconsistent with the idea that punishment could inhibit behavior under normal circumstances.<sup>52</sup> To be effective, they argued, deterrence requires either extreme (and likely cruel) forms of punishment or repeated applications of punishment.<sup>53</sup> In the full spirit of the reigning rehabilitative model of the time, Appel and Peterson concluded that punishment is “essentially an ineffective way to control or to eliminate the behavior of the punished person.”<sup>54</sup>

Although adherents were certainly in the minority, not all scholars were dismissive of deterrence theory. In fact, three articles published in the *Journal* were instrumental in keeping the deterrence doctrine intellectually alive until it could be fully revived in the late 1960s. The first of these was by Johannes Andenaes. The *Journal* published his ultimately influential article in 1952, almost two decades after von Hentig’s and in the midst of the popularity of the medical model of deviance and the rehabilitation

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<sup>47</sup> *Id.* at 559 (emphasis omitted).

<sup>48</sup> Jackson Toby, *Is Punishment Necessary?*, 55 J. CRIM. L., CRIMINOLOGY & POLICE SCI. 332 (1964).

<sup>49</sup> *Id.* at 333 (citing ÉMILE DURKHEIM, *THE DIVISION OF LABOR IN SOCIETY* 89 (1947)).

<sup>50</sup> *Id.* at 333-34.

<sup>51</sup> James B. Appel & Neil J. Peterson, *What’s Wrong with Punishment?*, 56 J. CRIM. L., CRIMINOLOGY & POLICE SCI. 450 (1965).

<sup>52</sup> *Id.* at 452-53.

<sup>53</sup> *Id.*

<sup>54</sup> *Id.* at 453.

model of corrections.<sup>55</sup> In his article, Andenaes argued for what he called the “general preventive effect of punishment.”<sup>56</sup> The general preventive effect of punishment includes general deterrence but is much broader than that, also including the moralizing effect that punishment may have and its effect in creating a habit of conformity.<sup>57</sup> Andenaes’s perspective was distinctive, however, in its stance against the prevailing popular and scientific winds as embodied in the assertion that punishment could play an important role in securing compliance.<sup>58</sup> He acknowledged that the consideration of the general preventive effects of punishment had, over the years, taken a back seat to the individual preventive effects.<sup>59</sup> The individual preventive effects of punishment include rehabilitation or reformation of the offender as well as incapacitation and specific deterrence.<sup>60</sup> Andenaes also asserted that at least one of the reasons why punishment for general preventive effects was not more popular within the scientific and policy communities was because there was not a sound empirical basis for the proposition that punishment had general deterrent, moralizing, or habituating effects:

These views on the relationship between general prevention and the magnitude of punishment are built upon abstract reasoning . . . . It must be admitted at once that only very little support for the proposition is to be deduced from experience—in the first place because the general-preventive effect is always hard to ascertain, and second because there has never been a systematic gathering of material which could illuminate the question.<sup>61</sup>

At the conclusion of his article, Andenaes simply noted that “the empirical data are still lacking . . . [and] we shall not have firm ground to stand on before a systematic investigation is made into the effect of penal law and its enforcement on the citizen’s behavior.”<sup>62</sup>

To get a sense of the resistance to Andenaes’s efforts to bring forward a discussion of the role of punishment in deterrence in the existing intellectual current of the time, the *American Catholic Sociological Review* published a review of his article wherein the reviewer noted that Andenaes’s “approach, which talks of eliminating crime by means of more effective law enforcement and heavier penalties, is at first repugnant to the

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<sup>55</sup> Johs Andenaes, *General Prevention—Illusion or Reality?*, 43 J. CRIM. L., CRIMINOLOGY & POLICE SCI. 176 (1952).

<sup>56</sup> *Id.* at 177.

<sup>57</sup> *Id.* at 179.

<sup>58</sup> *Id.* at 179-180.

<sup>59</sup> *Id.* at 175.

<sup>60</sup> *Id.* at 180.

<sup>61</sup> *Id.* at 193.

<sup>62</sup> *Id.* at 197.

democratic citizen and smacks of the police state.”<sup>63</sup> The reviewer acknowledged that Andenaes may have had a point about the moralizing effects of punishment, but that “the empirical data on crime prevention are still lacking.”<sup>64</sup>

The review of Andenaes’s article was followed just two years later by an article by John Ball in the *Journal* entitled “The Deterrence Concept in Criminology and Law.”<sup>65</sup> Ball too was clearly aware of the fact that most criminologists thought that punishment is archaic and barbaric, that crime is really due to some underlying individual pathology, and that the only way to reduce it is through the rehabilitation of individual offenders.<sup>66</sup> As a result of this concern with reformation, most scholars either ignored deterrence theory or “incorrectly and prematurely dismissed [it] as invalid.”<sup>67</sup> Ball’s point, much like Andenaes’s, was that rather than dismiss deterrence on ideological grounds, there needed to be empirical research conducted so that a scientific evaluation of the theory could be undertaken.<sup>68</sup> Ball went much farther than simply lamenting the absence of an existing empirical foundation for deterrence theory; he articulated a comprehensive research agenda. Two very critical points in that agenda were that it is very likely that any empirical deterrent effect for punishment (1) depends upon the certainty of punishment, and (2) requires an understanding of would-be offenders’ perceptions of punishment rather than the objective properties of punishment.<sup>69</sup> As Ball wrote, “A law can have no deterrent influence upon a potential criminal if he is unaware of its existence.”<sup>70</sup> These two points would play an important role in the subsequent development of deterrence theory.

In 1965, the *Journal* published the third important article pertaining to deterrence theory; C. Ray Jeffery, who was at the time the Editor of the *Journal*’s Book Review section, penned the article.<sup>71</sup> Entitled “Criminal

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<sup>63</sup> Joseph G. Green, Jr., Periodical Review, 14 AM. CATHOLIC SOC. REV. 57, 57 (1953). (reviewing Andenaes, *supra* note 55).

<sup>64</sup> *Id.*

<sup>65</sup> John C. Ball, *The Deterrence Concept in Criminology and Law*, 46 J. CRIM. L., CRIMINOLOGY & POLICE SCI. 347 (1955).

<sup>66</sup> *Id.* at 347-48.

<sup>67</sup> *Id.* at 348.

<sup>68</sup> See Andenaes, *supra* note 55.

<sup>69</sup> Ball, *supra* note 65, at 351.

<sup>70</sup> *Id.*

<sup>71</sup> C. R. Jeffery, *Criminal Behavior and Learning Theory*, 56 J. CRIM. L., CRIMINOLOGY & POLICE SCI. 294, 294 (1965). A paper by Schmideberg published in the *Journal* five years before Jeffery’s also presented a staunch defense for the use of punishment for deterrent purposes. Melitta Schmideberg, *The Offender’s Attitude Toward Punishment*, 51 J. CRIM. L., CRIMINOLOGY & POLICE SCI. 328 (1960).

Behavior and Learning Theory,” the article’s primary focus was the author’s interest in crafting a learning theory of criminal behavior that drew upon the work of Edwin Sutherland and B. F. Skinner.<sup>72</sup> Since punishment is an integral part of operant learning theory, Jeffery spent some time discussing its role in criminal behavior.<sup>73</sup> He argued that the experimental evidence that was accumulating in psychology supported the position that punishment (or at least its certainty) can play a constructive role in deterring criminal behavior.<sup>74</sup> There are, however, three features about legal punishment that prevent it from being an even more effective deterrent: (1) legal punishments are generally very uncertain, (2) they are only imposed long after the crime has been committed and so have low celerity, and (3) the pleasures of crime are immediate and so carry greater weight than the delayed costs of crime in the would-be offender’s calculus.<sup>75</sup> In a point that is returned to at the end of this Article, Jeffery noted that an unfortunate feature of punishment and criminal behavior is that “[t]here are no aversive stimuli in the environment *at that moment*.”<sup>76</sup>

### C. MODERN REVIVAL OF DETERRENCE THEORY

Although the classical school’s advocacy of deterrence theory had come dangerously close to being scientifically discredited and the best that one could say of it was that it was politely ignored by both academics and penal reformers, it continued to have its group of supporters. Influential articles published in the *Journal* and a few other social scientific journals and law reviews kept the belief in the deterrent effect of punishment alive, if only on life-support.<sup>77</sup> Rejection of the deterrence doctrine seemed to be based more upon ideological than empirical grounds as both friend and foe of deterrence noted that the empirical base was exceedingly thin.<sup>78</sup>

In spite of the neglect and criticism heaped upon deterrence theory by generations of criminologists and other scholars interested in crime, two articles appeared in 1968 that revived interest in deterrence theory—one by

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<sup>72</sup> Jeffery, *supra* note 71, at 294.

<sup>73</sup> *Id.* at 294-295.

<sup>74</sup> *Id.* at 299.

<sup>75</sup> *Id.*

<sup>76</sup> *Id.* (emphasis added).

<sup>77</sup> See generally Daniel S. Nagin, *Criminal Deterrence Research at the Outset of the Twenty-First Century*, in 23 CRIME & JUSTICE: A REVIEW OF RESEARCH I (Michael Tonry ed., 1998); Raymond Paternoster, *The Deterrent Effect of the Perceived Certainty and Severity of Punishment: A Review of the Evidence and Issues*, 4 JUST. Q. 173 (1987).

<sup>78</sup> There was, however, excellent empirical research on the deterrent effect of capital punishment on homicide rates. See THORSTEN SELLIN, *THE DEATH PENALTY* (1959). Even those who argued that capital punishment was not an effective deterrent acknowledged that this does not necessarily mean that other types of punishment are not capable of deterring.

an economist and one by a sociologist. The article by economist Gary Becker was premised on an understanding of crime that was similar to Bentham's,<sup>79</sup> while sociologist Jack P. Gibbs's article drew more from Beccaria.<sup>80</sup> Both articles ignited great interest in empirically testing some of the hypotheses of deterrence theory. After Gibbs's and Becker's articles, there were scores of empirical studies of the effect of sanctions and sanction threats, and that scholarly effort continues to the present day.<sup>81</sup> At long last, the battle between deterrence and other possible state responses to crime was waged, at least in part, on empirical grounds.

Becker made an explicit point of rejecting existing theories of crime that presumed that offenders possess some sort of extraordinary motivation based upon strain or psychological abnormalities and, instead, argued that crime was due to rational self-interest and could be understood like any other kind of economic activity: "[A] useful theory of criminal behavior can dispense with special theories of anomie, psychological inadequacies, or inheritance of special traits and simply extend the economist's usual analysis of choice."<sup>82</sup> The economist's "usual analysis of choice" was a rational choice model of criminal behavior that

assumes that a person commits an offense if the expected utility to them exceeds the utility he could get by using his time and other resources at other activities . . . . Some persons become "criminals," therefore, not because their basic motivation differs from that of other persons, but because their benefits and costs differ.<sup>83</sup>

Becker argued that, in the expected utility model, the decision to offend is made up of the costs and benefits of both crime and non-crime.<sup>84</sup> The costs include the formal legal punishments available for a crime, and Becker noted that the certainty of legal penalties are more important than their severity.<sup>85</sup> Though obviously less sophisticated than Becker, Bentham's theory of crime contained many of the same principles: criminal behavior requires no special motivation; behavior is a product of the utility of actions; the utility of an action is the net difference between the benefits and

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<sup>79</sup> Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. POL. ECON. 169, 170 (1968).

<sup>80</sup> Jack P. Gibbs, *Crime, Punishment, and Deterrence*, 48 SOUTHWESTERN SOC. SCI. Q. 515, 515-16 (1968).

<sup>81</sup> See generally JACK P. GIBBS, *CRIME, PUNISHMENT, AND DETERRENCE* (1975); FRANKLIN E. ZIMRING & GORDON J. HAWKINS, *DETERRENCE: THE LEGAL THREAT IN CRIME CONTROL* (1973); Nagin, *supra* note 77; Paternoster, *supra* note 77.

<sup>82</sup> Becker, *supra* note 79, at 170.

<sup>83</sup> *Id.* at 176.

<sup>84</sup> *Id.* at 177-78.

<sup>85</sup> *Id.* at 178.

costs of that action; other things being equal, the action with the greatest utility will be selected among alternatives.<sup>86</sup>

Gibbs's article that same year was much more Beccarian in that it focused exclusively on the role of punishment in criminal behavior and adopted a specific theory of criminal deterrence by legal sanctions rather than the more general expected utility theories of Bentham and Becker.<sup>87</sup> Gibbs was less interested in discussing notions of utility and the diverse benefits and costs of crime than he was in the more specific question of whether or not actual punishment, implemented by authorities, was effective in reducing crime. Gibbs also initiated an agenda of empirical research on the subject—something that had been missing throughout the previous two centuries—that examined the relationship between the certainty and severity of punishment in individual states and their crime rates.<sup>88</sup> The importance of Gibbs's article is that it provided an empirical example of how deterrence research could be done, and his finding of an inverse relationship between the certainty of punishment in a state and the homicide rate provided some support for those who believed that there was something to the deterrence argument. Gibbs created convincing operational definitions of the certainty and severity of punishment for homicide across the several states and argued that if the deterrence doctrine was valid, then states where the certainty and severity of punishment were higher would have lower homicide rates.<sup>89</sup> This is precisely what he found, providing empirical evidence that perhaps punishment is effective in generating compliance with the laws.<sup>90</sup> Gibbs's confirmation of general deterrence initiated a veritable cottage industry of deterrence research among sociologists and criminologists.<sup>91</sup> Subsequent research examined the deterrence of crimes other than homicide, entertained new measures of the certainty and severity of punishment, and pursued nagging methodological issues such as possible feedback effects between crime and punishment.<sup>92</sup> By the early to mid-1970s, empirical and theoretical work in deterrence was a vibrant field, and the publication of two important books, Zimring and Hawkins's *Deterrence: The Legal Threat in Crime Control*

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<sup>86</sup> See generally BENTHAM, *supra* note 3.

<sup>87</sup> Gibbs, *supra* note 80.

<sup>88</sup> *Id.* at 523-25.

<sup>89</sup> *Id.* at 519-20.

<sup>90</sup> *Id.* at 524-25.

<sup>91</sup> For descriptions of this research, see GIBBS, *supra* note 81; ZIMRING & HAWKINS, *supra* note 81; Nagin, *supra* note 77.

<sup>92</sup> Paternoster, *supra* note 77. See generally Nagin, *supra* note 77.

and Gibbs's *Crime, Punishment, and Deterrence*, greatly helped to solidify interest in deterrence.<sup>93</sup>

Two important theoretical developments in deterrence work occurred later in the mid-1980s. One development was that scholars began to understand deterrence theory as a theory about the *perception* of sanction threats and the relationship between those perceptions and self-reported behavior.<sup>94</sup> This stood in contrast to research and theorizing from the mid-1960s to the late 1970s, which mainly dealt with the objective properties of punishment.<sup>95</sup> The charge began when Geerken and Gove developed a perceptual theory of deterrence,<sup>96</sup> after which scholars began to understand deterrence as a social psychological theory of threat communication and to realize that if the objective properties of punishment are important, it is only because they affect crime through individual perceptions.<sup>97</sup> The restatement of deterrence as a perceptual theory, and therefore a theory at the individual or micro-level, led to another outpouring of deterrence research that began in the mid-1970s and continues to the present day.<sup>98</sup>

In addition to a conception of deterrence that emphasized a perceptual dimension, a second important theoretical development in deterrence theory occurred in the mid-1980s. Traditionally, deterrence theory had been restricted to the proposition that the imposition or the threat of the imposition of *formal legal sanctions* was related to crime.<sup>99</sup> The definition of deterrence provided by Gibbs is a perfect example of this: "Deterrence can be thought of as the omission of an act as a response to the perceived risk and fear of punishment for *contrary* behavior. Since the deterrence

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<sup>93</sup> See GIBBS, *supra* note 81; ZIMRING & HAWKINS, *supra* note 81.

<sup>94</sup> GIBBS, *supra* note 81, at 115.

<sup>95</sup> See, e.g., Gibbs, *supra* note 80; Charles H. Logan, *General Deterrent Effects of Imprisonment*, 51 SOC. FORCES 64 (1972); Charles R. Tittle, *Crime Rates and Legal Sanctions*, 16 SOC. PROBS. 409 (1969).

<sup>96</sup> Michael R. Geerken & Walter R. Gove, *Deterrence: Some Theoretical Considerations*, 9 LAW & SOC'Y REV. 497 (1975); see also Gordon P. Waldo & Theodore G. Chiricos, *Perceived Penal Sanction and Self-Reported Criminality: A Neglected Approach to Deterrence Research*, 19 SOC. PROBS. 522 (1972).

<sup>97</sup> GIBBS, *supra* note 81, at 15-16.

<sup>98</sup> See, e.g., Waldo & Chiricos, *supra* note 96; Linda Saltzman et al., *Deterrent and Experiential Effects: The Problem of Causal Order in Perceptual Deterrence Research*, 28 J. RES. CRIME & DELINQ. 172 (1982); Maynard L. Erickson, Jack P. Gibbs & Gary F. Jensen, *The Deterrence Doctrine and the Perceived Certainty of Legal Punishments*, 42 AM. SOC. REV. 305 (1977); Thomas Loughran et al., *Reassessing the Certainty Effect in Deterrence Theory: Insights From Prospect Theory* (Jan. 25, 2010) (unpublished manuscript, on file with author).

<sup>99</sup> See GIBBS, *supra* note 81, at 2.

doctrine focuses on crime, the acts in question are violations of criminal laws and the punishments are 'legal.'"<sup>100</sup>

Later, the conceptual boundaries of deterrence theory were gradually expanded. In 1986, Williams and Hawkins argued that any inhibition of crime that was brought about directly or indirectly by the threat of legal sanctions should be considered part of the deterrence process.<sup>101</sup> They drew a distinction between punishment that is based upon the criminal act itself and punishment that is based upon any legal reaction to the criminal act.<sup>102</sup> For example, if I refrain from drinking and driving because I fear that my spouse will think less of me if she finds out that I have been drinking and driving, my inhibition is not due to deterrence but to an extralegal process (social censure or embarrassment). However, if I refrain from drinking and driving because I fear that if I am *arrested* my spouse will think less of me because of the arrest, then since her disapproval is triggered by the arrest and not the act itself, my avoidance of drinking and driving is to be considered an instance of deterrence. Williams and Hawkins essentially added a new cluster of right-hand-side variables to the deterrence equation so that it included inhibition due to the threat of legal punishment, and inhibition due to the threat of social censure, commitment costs (fear of losing my job if arrested), and any self-imposed costs (guilt if I were arrested).

Around the same time, rational choice models of crime were being developed in criminology,<sup>103</sup> and these models were decidedly inspired by both Bentham and Becker in that they included the full range of anticipated benefits and costs of crime.<sup>104</sup> In content they were very much what Bentham described, and they were called subjective expected utility models because they were predicated on the perceived or subjectively understood costs and benefits of criminal offending,<sup>105</sup> something that Ball argued for three decades earlier in the *Journal*.<sup>106</sup> At this point, a pure deterrence model was blended into a more general rational choice model of crime in which anticipated legal costs are simply one of several factors considered by rational and reasoning would-be offenders.

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<sup>100</sup> *Id.* at 2.

<sup>101</sup> Kirk R. Williams & Richard Hawkins, *Perceptual Research on General Deterrence: A Critical Review*, 20 *LAW & SOC'Y REV* 545, 561-66 (1986).

<sup>102</sup> *Id.* at 558-61.

<sup>103</sup> See CORNISH & CLARKE, *supra* note 32.

<sup>104</sup> Pamela Lattimore & Ann Witte, *Models of Decision Making Under Uncertainty: The Criminal Choice*, in *THE REASONING CRIMINAL* 129, *supra* note 32, at 131-34.

<sup>105</sup> *Id.*

<sup>106</sup> Ball, *supra* note 65, at 351.

With this basic history of deterrence theory completed, the next section provides a summary of the major hypotheses and research questions posed by the theory. This is followed by a brief examination of the existing empirical support for each of the hypotheses.

### III. BASIC PRINCIPLES OF DETERRENCE THEORY

Deterrence theory is a theory of crime that presumes that human beings are rational enough to consider the consequences of their actions and to be influenced by those consequences.<sup>107</sup> Generally, as self-interested and relatively free agents, human beings are influenced by the benefits and costs of their actions. Virtually any human activity can be understood as resulting in both benefits and costs, and persons are presumed to be rational enough to weigh the costs and benefits of any action and any reasonable alternative courses of action. The behavior with the greatest advantage of benefits over costs (the one resulting in greater utility) is presumed to be the behavior with the highest probability of being acted upon. Deterrence theorists presume, therefore, that human beings are self-interested, rational, and reasoning creatures.<sup>108</sup> An implication of this view is that an innate propensity to commit crime is not possessed by some people but not by others (the Positive School's notion of "differentiation" between criminals and non-criminals)<sup>109</sup> but instead resides in everyone.<sup>110</sup> Since we are all motivated by self-interest, we all have the capacity to commit crime when the benefits of crime exceed the costs. Similarly, we are all motivated to go to college or get married if the benefits of post-secondary education and marriage are thought to be greater than the costs. In other words, crime is no different than other behavior and criminals are no different than non-criminals—what differs across people are their assessments of the costs and benefits of different lines of action.<sup>111</sup>

As a human activity, crime comes with its own stock of benefits and costs. As suggested above, the decision to commit crime is no different than the decision to go to college or to get married—it is made by reasonable, rational agents who are self-interested and select behaviors that provide more rewards than costs. This means that crime does not have to be explained by any extraordinary motivation—or any motivation at all—

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<sup>107</sup> DAVID M. KENNEDY, *DETERRENCE AS CRIME PREVENTION: RECONSIDERING THE PROSPECT OF SANCTION* 15-23 (2008); ZIMRING & HAWKINS, *supra* note 81, at 106-08.

<sup>108</sup> See generally BENTHAM, *supra* note 3; GIBBS, *supra* note 81; ZIMRING & HAWKINS, *supra* note 81.

<sup>109</sup> See TAYLOR ET AL., *supra* note 42, at 24-26.

<sup>110</sup> *Id.*

<sup>111</sup> Lattimore & Witte, *supra* note 104.

other than self-interest.<sup>112</sup> Most of the time, people are not compelled to commit criminal acts<sup>113</sup> but do so when the expected benefits outweigh the expected gains. A key term in deterrence theory, therefore, is the notion of *utility*, which simply refers to the total satisfaction that is derived from a course of action or consumption.<sup>114</sup> A very simple equation to express the basic premise of deterrence theory is that an individual will decide to offend if:

$$U(\text{Crime}) = p_1 (\text{Benefits of Crime}) + p_2 (\text{Costs of Crime}) \\ + p_3 (\text{Benefits of Non-Crime}) + p_4 (\text{Costs of Non-Crime}) \quad (1.1)$$

This equation states that the utility of crime is equal to the sum of the benefits of crime (easy money, the “high” of drug use, prestige, or “rep”), the costs of crime (getting arrested, getting convicted, going to jail, loss of family respect, not seeing one’s children while in jail or prison), the benefits of non-crime (a steady and safe income from a job, physical security from not being shot or falling ill from ingesting bad drugs), and the costs of non-crime (low wages, feeling like a failure from a low-prestige job). The  $p$ ’s reflect the probability of each event occurring. The utility of crime, then, is determined not only by the outcomes, but by the probability of those outcomes.

One of the costs of crime is the possible legal punishment, including being arrested for committing the act, getting convicted of the crime, and being subjected to some kind of punishment as a result of conviction (jail, probation, prison, or, in some jurisdictions for some crimes, death). Deterrence theorists presume that punishment by the legal system will increase the cost of—and therefore inhibit—crime.<sup>115</sup> There are three properties of legal punishment that are related to its cost, the (1) certainty, (2) severity, and (3) celerity (or swiftness) of punishment. Other things being equal, a legal punishment is more costly when it is more certain (more likely than not to be a consequence of crime), severe (greater in magnitude), and swift (the punishment arrives sooner rather than later after the offense). This leads to the three key hypotheses that can be deduced

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<sup>112</sup> BENTHAM, *supra* note 3, at 1-2.

<sup>113</sup> The fact that most crime can be explained as rational and self-interested behavior does not mean that all crime has to be so explained in order for the theory to be valid. Some crimes are committed by people who are under the influence of strong compulsions or emotional forces that co-opt or minimize rational thinking. See Daniel Ariely & George Loewenstein, *The Heat of the Moment: The Effect of Sexual Arousal on Sexual Decision Making*, 19 J. BEHAV. DECISION MAKING 87 (2006) (showing the effect of emotions on decision making); George Loewenstein, *Out of Control: Visceral Influences on Behavior*, 65 ORGANIZATIONAL BEHAV. & HUM. DECISION PROCESSES 272 (1996) (same).

<sup>114</sup> BENTHAM, *supra* note 3, at 2-3.

<sup>115</sup> GIBBS, *supra* note 81, at 5, ZIMRING & HAWKINS, *supra* note 81, at 1-9.

from deterrence theory, which have served to guide empirical research over the past fifty years:<sup>116</sup>

H<sub>1</sub>: The greater the certainty of legal punishment, the lower the crime rate.

H<sub>2</sub>: The greater the severity of legal punishment, the lower the crime rate.

H<sub>3</sub>: The greater the celerity of legal punishment, the lower the crime rate.

The important deterrence variables are, then, certainty, severity, and celerity. There are two levels of these punishment properties, an objective level and a subjective (or perceptual) level. In general, the criminal justice system is premised in part on the expectation that having rigorously enforced laws and appropriate penalties that are applied with reasonable swiftness will lower crime by deterring punished persons from offending again and deterring would-be offenders from committing new crimes. How certainly, severely, and swiftly a jurisdiction *actually responds* to crime constitutes the objective properties of punishment.<sup>117</sup> For example, if ten of every one hundred armed robbers are arrested in City X, then the objective certainty of arrest for armed robbery is 0.10. If the average prison term imposed by judges for those convicted of armed robbery is seven years, then one indicator of the objective severity of punishment is seven years in prison.

A legal jurisdiction can hope to reduce crime by increasing the number of law enforcement officers on the street, thereby increasing the certainty with which an offender would be caught for misdeeds.<sup>118</sup> This was the intention of President Clinton's effort in 1994 to add 100,000 new police officers by the year 2000.<sup>119</sup> Increasing the number of police officers on the street was an attempt to increase the *objective* certainty of punishment. A jurisdiction can also attempt to reduce crime by increasing the penalty or punishment for an act even without affecting its certainty. For example, many states have passed felony firearm laws that enhance the severity of punishment for a felony offense if the offender uses or threatens to use a firearm.<sup>120</sup> The purpose of such laws is to increase the cost of the crime and deter would-be offenders from using guns when committing crimes.

Of course, even Bentham was aware that the objective properties of punishment work to inhibit crimes by increasing how the certainty, severity,

<sup>116</sup> GIBBS, *supra* note 81, at 5.

<sup>117</sup> *Id.* at 8.

<sup>118</sup> See generally *id.*; KENNEDY, *supra* note 107; MARK A.R. KLEIMAN, WHEN BRUTE FORCE FAILS: HOW TO HAVE LESS CRIME AND LESS PUNISHMENT (2009).

<sup>119</sup> William N. Evans & Emily G. Owens, *COPS and Crime*, 91 J. PUB. ECON. 181, 182 (2007).

<sup>120</sup> KENNEDY, *supra* note 107, at 10, 13.

and celerity of punishments are perceived by would-be offenders.<sup>121</sup> In other words, legislators establish and modify the objective properties of punishment with the expectation that the *perceptual properties of punishment* will be affected. The perceptual properties of punishment are those properties that are *thought to exist* in a jurisdiction by its population of offenders and would-be offenders.<sup>122</sup> For example, in the hypothetical jurisdiction above in which ten out of one hundred armed robbers were arrested, the objective certainty of arrest for armed robbery was 0.10. It may be, however, that would-be armed robbers think that the probability of being caught and arrested if they commit armed robbery is much higher (0.25) or much lower (0.05) than what it actually is. Similarly, a state may pass a felony firearm law, enhancing the penalty for felonies committed with a gun, hoping to reduce the proportion of such crimes. The state would pass such a law with the expectation that the increased punishment that could be inflicted under the law will be recognized by the public, including would-be felons.

Deterrence theorists presume that there is a strong positive correlation between the objective and subjective (perceptual) properties of punishment. The relationship between these two properties of punishment cannot, however, be taken for granted. This relationship is first of all empirical, and the relationship between the two likely falls far short of unity. Moreover, the subjective properties of punishment are likely affected by things other than the objective properties of punishment. Since the objective properties of punishment matter for deterrence theory only to the extent that the perceptual properties are affected, the magnitude and nature of the relationship between the objective and perceptual properties of punishment is an important consideration for deterrence theory and public policy.<sup>123</sup> At its core, therefore, deterrence theory is a social psychological theory of threat communication in which the causal chain runs from the objective properties of punishment through the perceptual properties of punishment to crime.

The causal process of deterrence is illustrated in Figure 1. The dashed line connecting the objective properties of punishment to crime indicates that crime control policies are frequently manipulated to reduce crime and operate under the assumption that the perceptual properties of punishment will change as well, without explicit empirical proof that they have changed. The important conclusion to be drawn from Figure 1 is that in

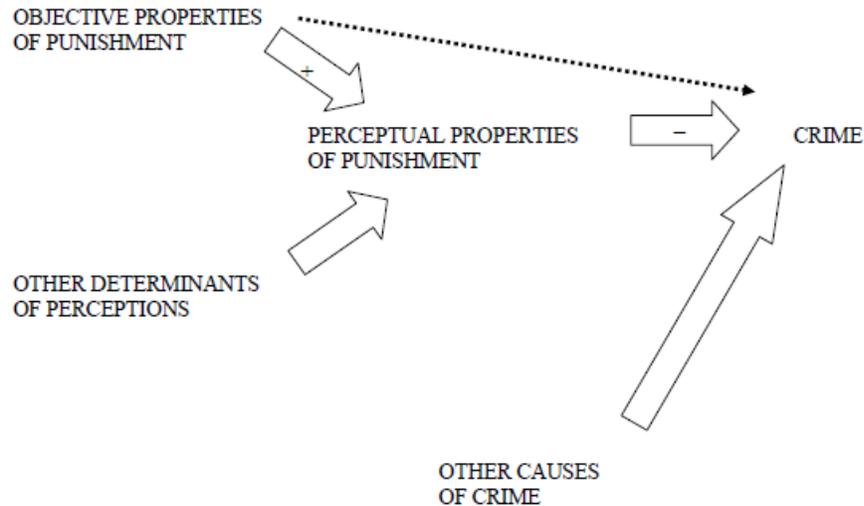
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<sup>121</sup> BENTHAM, *supra* note 3, at 43.

<sup>122</sup> GIBBS, *supra* note 81, at 7.

<sup>123</sup> *Id.* at 115.

**Figure 1**  
*Causal Process of Deterrence*



order for deterrence to occur, a lot must happen. For an increase in the number of police officers to affect the crime rate, for example, there must be a perception among the class of would-be offenders that the certainty of punishment has increased, and this increase must be connected to their refraining from crime. Similarly, whether or not the certainty of enforcement or punishment increases with the use of incarceration, it cannot have a deterrent effect unless it affects the perceptions of those who are contemplating offending and those intentions to offend are altered by the increased risk of sanctions.

From the causal schema in Figure 1, one can deduce some more precise deterrence hypotheses that can be subject to empirical tests:

H<sub>1</sub>: Other things being equal, there should be an inverse relationship between the objective properties of punishment (certainty, severity, celerity) and the crime rate.

H<sub>2</sub>: Other things being equal, there should be a positive relationship between the objective properties of punishment (certainty, severity, celerity) and the perceptual properties.

H<sub>3</sub>: Other things being equal, there should be an inverse relationship between the perceptual properties of punishment (certainty, severity, celerity) and measures of criminal offending.

Figure 1 illustrates the causal process assumed by deterrence theory at the most general level. I use this model as the basic framework for discussing the empirical literature pertaining to deterrence theory.

The causal process of deterrence is made up of three distinct links. The first link is that between the objective properties of punishment and crime rates. It is presumed that the law enforcement and punishment policies of legal jurisdictions are inversely related to crime levels in those jurisdictions.<sup>124</sup> If this relationship can be demonstrated empirically, it can be attributed to a deterrent effect only if: (a) there is a link between criminal justice practices and perceptions of those practices on the part of offenders and would-be offenders and (b) the reduction in crime is not due to some other mechanism (such as the incapacitation of high-rate offenders). Research on the link between the objective properties of punishment and crime rates assumes, but does not demonstrate, that the second link—that between the objective and perceptual properties of punishment—exists.<sup>125</sup> The third link in the process is that between the perceived properties of punishment and some measure of self-reported offending.

There is a substantial volume of existing research about the possible deterrent value of various criminal justice policies (policing practices, sentencing, and prison) and aggregate levels of crime, and between perceptions of sanction threats and offending at the individual level.<sup>126</sup> There is much less research, however, on the relationship between the objective and perceptual properties of punishment.<sup>127</sup>

#### IV. THE RELATIONSHIP BETWEEN OBJECTIVE SANCTIONS AND CRIME RATES

The first hypothesis states that there should be an inverse relationship between the objective properties of legal sanctions and crime rates. More specifically, increasing the certainty, severity, and celerity of legal sanctions should result in lower levels of crime. A very good point to begin this analysis of deterrence is long-term crime trends in the United States. Figure 2 shows the rate of property and violent index crimes for the United States over the period from 1962 to 2008. It reveals that, from the early 1960s until the 1980s, there was a steady increase in both property and violent index crimes. From the late 1970s until about the mid-1980s, both rates of crime slightly declined. There followed several years of increases in crime, particularly for violent index offenses, with both rates reaching

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<sup>124</sup> *Id.* at 5.

<sup>125</sup> See Nagin, *supra* note 77, at 26

<sup>126</sup> KENNEDY, *supra* note 118, at 9-14

<sup>127</sup> Nagin, *supra* note 77, at 5-6.

peaks in 1991. After 1991, however, there was a consistent and substantial decline in the rate of both property and violent crime up to the year 2000—what has become known as “the great crime drop.”<sup>128</sup> Both property and violent crime rates continued to decline in the years leading up to 2008, but at a much slower rate. The decline in crime over the period from 1990 to 2008 was very gradual and consistent, but also remarkable in its cumulative magnitude. By 2008, the rate of violent crime was down about 66% from its level in 1992, while the property crime rate had declined by about 53%. This decline in crime occurred across all regions of the country, in both urban and rural areas, and for all index crime categories.<sup>129</sup> Quite literally, the bottom fell out of crime. In trying to account for this dramatic and long-term decline in crime, it is imperative to examine the criminal justice system and determine whether changes in deterrence-related policies might have had a hand creating the decline. A couple of suspects come readily to mind—the police and the use of imprisonment.

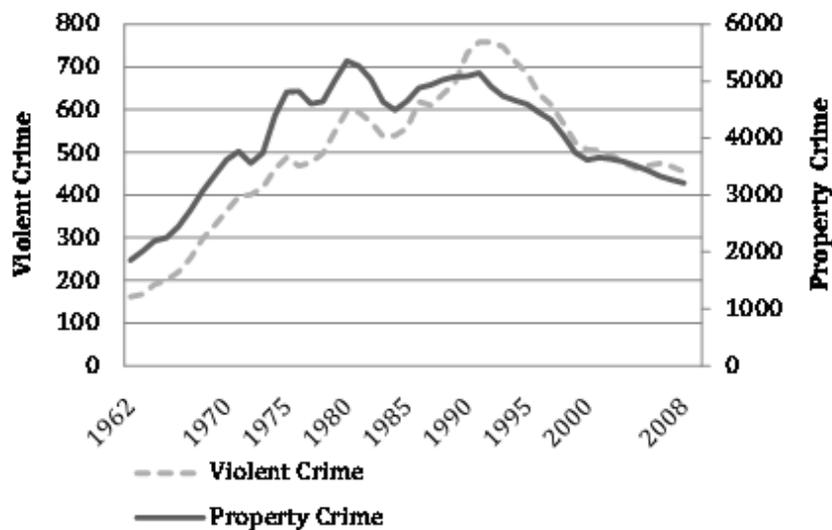
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**Figure 2**

*Property and Violent Crime Rate in the United States, 1962-2008*



Source: Uniform Crime Reports.

<sup>128</sup> ALFRED BLUMSTEIN & JOEL WALLMAN, *THE CRIME DROP IN AMERICA* 1-12 (2000).

<sup>129</sup> UNIFORM CRIME REPORTING PROGRAM, DEP'T OF JUSTICE, *CRIME IN THE UNITED STATES—2001: SECTION 2: CRIME INDEX OFFENSES REPORTED* 64 tbl.1 (2002), available at [http://www.fbi.gov/ucr/cius\\_01/01crime2.pdf](http://www.fbi.gov/ucr/cius_01/01crime2.pdf). See generally FRANKLIN E. ZIMRING, *THE GREAT AMERICAN CRIME DECLINE* (2007).

## A. THE ROLE OF THE POLICE IN DETERRENCE

In 1994, President Clinton signed the Violent Crime Control and Law Enforcement Act, which initiated many policies aimed at increasing the deterrent bite of the law, including new firearms restrictions, tougher sentencing laws, and a plan to put 100,000 new police officers on the street.<sup>130</sup> There is evidence that, as a result of federal funding, there was a noticeable increase in the number and per capita rate of police officers in the United States beginning in the early 1990s.<sup>131</sup> Although it is difficult to say for sure, one estimate indicated that there was an increase of approximately 50,000 to 60,000 police officers in the United States (a per capita expansion of about 14%).<sup>132</sup> The intended effect of putting more police officers on the streets was to increase the objective probability or certainty of arrest, with a subsequent deterrent effect on the crime rate. In addition to a sheer increase in numbers, however, police began experimenting with more targeted strategies of enforcement in the 1990s. They started using technology to identify geographic areas of high crime or “hot spots,” and they engaged in “crackdowns” that targeted particular kinds of crime, such as drug dealing and weapons offenses, with enhanced enforcement.<sup>133</sup> It is possible that the rather dramatic decrease in crime observed in the United States since the 1990s was due to the combination of more police and better policing.

With respect to the role of the police, many scholars have concluded—although there is some dispute about this—that at least some of the decline in crime rates can be attributed to an increase in the number of police and the increased certainty of punishment associated with that increase.<sup>134</sup> That an increase in police presence would have the effect of producing some reduction in crime can be anticipated by previous research that showed a connection between the two. James Q. Wilson and Barbara Boland conducted one of the first comprehensive studies of the general effect of police behavior on crime rates.<sup>135</sup> They examined the effect of aggressive

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<sup>130</sup> Pub. L. No. 103-322, 108 Stat. 1796 (1994).

<sup>131</sup> BRIAN A. REAVES & MATTHEW J. HICKMAN, BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, POLICE DEPARTMENTS IN LARGE CITIES, 1990-2000 (2002).

<sup>132</sup> Steven D. Levitt, *Understanding Why Crime Fell in the 1990s: Four Factors That Explain the Decline and Six That Do Not*, 18 J. ECON. PERSPS. 163, 177 (2004).

<sup>133</sup> Christopher S. Koper & Evan Mayo-Wilson, *Police Crackdowns on Illegal Gun Carrying: A Systematic Review of Their Impact on Gun Crime*, 2 J. EXPERIMENTAL CRIMINOLOGY 227, 228-51 (2006); Leavitt, *supra* note 132, at 172.

<sup>134</sup> See JOHN ECK & EDWARD R. MAGUIRE, *Have Changes in Policing Reduced Violent Crime?: An Assessment of the Evidence*, in THE CRIME DROP IN AMERICA 207 (Alfred Blumstein & Joel Wallman eds., 2000).

<sup>135</sup> James Q. Wilson & Barbara Boland, *The Effect of the Police on Crime*, 12 LAW & SOC'Y REV. 367 (1978).

police patrolling practices (having patrol units on the street stopping cars and issuing moving citations) on robbery rates in thirty-five American cities.<sup>136</sup> Consistent with the expected deterrent effect of increased police activity, they found that robbery rates across cities were inversely related to the arrest ratios for robberies—in cities in which a higher proportion of robberies resulted in an arrest, the robbery rate was lower.<sup>137</sup> In addition, they found that the arrest ratio for robbery was higher in those cities that employed more aggressive police patrolling practices.<sup>138</sup> The authors concluded that more police cars out on the street “doing something,” such as issuing citations, increased their visibility, creating a higher certainty and severity of punishment (as evidenced by higher arrest ratios), which in turn is related to lower crime rates.<sup>139</sup>

Robert J. Sampson and Jacqueline Cohen replicated Wilson and Boland’s work in a study of all 171 U.S. cities with populations greater than 100,000 in 1980.<sup>140</sup> Sampson and Cohen examined the relationship between aggressive policing (defined as the number of arrests per police officer for disorderly conduct and driving under the influence) and robbery and burglary rates. Similar to Wilson and Boland, they found that police aggressiveness was associated with increased levels of arrest certainty for both robbery and burglary.<sup>141</sup> These two sets of findings suggest that what the police do can affect the objective certainty of punishment.

Thomas B. Marvell and Carlisle E. Moody and Steven D. Levitt conducted two additional studies about the deterrent effect of sheer police presence. In both studies, the researchers examined the relationship between the number of police officers per capita (in forty-nine U.S. states and fifty-six large cities during the period from 1973 to 1992 for Marvell and Moody, and in fifty-nine U.S. cities from 1970 to 1992 for Levitt) and measures of serious felony crime rates.<sup>142</sup> Consistent with deterrence theory, Marvell and Moody found a significant inverse relationship between the number of police officers and state-level homicide, robbery, and burglary rates.<sup>143</sup> At the city level, a deterrent effect was found for total

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<sup>136</sup> *Id.* at 372-74.

<sup>137</sup> *Id.* at 375-76.

<sup>138</sup> *Id.* at 378.

<sup>139</sup> *Id.*

<sup>140</sup> Robert J. Sampson & Jacqueline Cohen, *Deterrent Effects of the Police on Crime: A Replication and Theoretical Extension*, 22 *LAW & SOC’Y REV.* 163, 169 (1988).

<sup>141</sup> *Id.* at 175-83.

<sup>142</sup> Thomas B. Marvell & Carlisle E. Moody, *Specification Problems, Police Levels, and Crime Rates*, 34 *CRIMINOLOGY* 609, 623 (1996); Steven D. Levitt, *Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime*, 87 *AM. ECON. REV.* 270, 271 (1997).

<sup>143</sup> Marvell & Moody, *supra* note 142, at 630.

crimes, homicide, robbery, burglary, larceny, and auto theft. Moreover, the magnitude of the effects were non-trivial; they estimated that each additional police officer resulted in a reduction of about four crimes at the state level and twenty-four crimes at the city level.<sup>144</sup> Similarly, Levitt found that an increase in the number of police reduced crime by an average of approximately 5% to 8% across different crime types—with a greater effect for violent than property crimes.<sup>145</sup> With a different identification strategy than that used in his earlier paper, Levitt found, in a city-level data set which included 122 cities and covered the years from 1975 to 1995, that the number of police officers reduced both the violent and property crime rate by approximately 5%.<sup>146</sup>

There are, then, empirical grounds for the belief that at least some of the crime drop since the 1990s was due to the increase in the number of police officers. New York City experienced the largest drop in crime for any major U.S. city over this time period, with declines that were about twice the national average; it also experienced a uniquely dramatic increase in the number of police officers.<sup>147</sup> Zimring noted that in the ten-year period from 1990 to 2000, New York City had a 23% increase in the number of police per 100,000 population, compared with only a 2.6% increase in police per capita in nine of the other largest U.S. cities.<sup>148</sup> The New York Police Department (NYPD) also modified its style of policing during that decade, introducing the COMPSTAT management/organization system, which promised a more rationally targeted allocation of police resources. There were other changes to the way the NYPD did its police work during this period including a “zero tolerance” policy with respect to minor offending.<sup>149</sup> It was believed that more certain and severe enforcement of public drunkenness, littering, panhandling, and other public order laws would have a broader deterrent effect by serving notice that the police were vigilant about all crime. Given the “stew” of many changes in policing undergone by the NYPD during that time period, it is exceedingly difficult to separate any unique sources of deterrence.<sup>150</sup> Nevertheless, there is some evidence that police size and strategy had some deterrent

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<sup>144</sup> *Id.* at 632.

<sup>145</sup> Steven D. Levitt, *supra* note 142, at 280-83 tbl.5 (1997).

<sup>146</sup> Steven D. Levitt, Reply, *Using Electoral Cycles in Police Hiring to Estimate the Effect of Police on Crime: Reply*, 92 AM. ECON. REV. 1244, 1245, 1248-49 tbls.3 & 4 (2002).

<sup>147</sup> See ZIMRING, *supra* note 129, at 137 fig.6.1, 145 fig.6.5, 149 fig.6.7.

<sup>148</sup> See *id.* at 149 fig.6.7.

<sup>149</sup> *Id.* at 149-52.

<sup>150</sup> *Id.* at 156-58.

impact on crime, although the magnitude of that impact is very difficult to gauge.<sup>151</sup>

In one study, Hope Corman and H. Naci Mocan examined serious felony crime rates (murder, robbery, burglary, motor vehicle theft) in New York City during the period from 1970 to 1996 and how changes in those rates reflected changes in the monthly number of arrests and the number of police officers in the NYPD.<sup>152</sup> Consistent with a deterrent effect, they found that murders, robberies, burglaries, and thefts of motor vehicles significantly declined in response to increases in the arrest rate for each crime, and that robberies and burglaries declined with increases in the number of police officers.<sup>153</sup> Rosenfeld and his colleagues examined whether COMPSTAT had an impact on New York City homicide rates over the 1992-2001 period.<sup>154</sup> They concluded that the decline in both general homicides and gun-related homicides in New York City did not deviate from the average decline experienced in other cities, indicating that those decreases were not likely due to the introduction of COMPSTAT.<sup>155</sup> However, they did not analyze whether the general decline in crime in New York City since 2001 was due to COMPSTAT.<sup>156</sup>

A few studies have looked specifically at whether and how much of the crime decline in the 1990s in the United States could be attributed to more police officers. These additional hires were due to federal funding from the 1994 Crime Control Act through the COPS program.<sup>157</sup> Evans and Owens examined both the hiring of new police officers and the effect of those newly hired officers on city-level crime rates.<sup>158</sup> Using annual data from 1990 to 2001 from 2,074 cities (each with a population over 10,000), they found that the more officers that were added to city police departments, the lower the rates for all seven index offenses.<sup>159</sup> The reduction in crime was statistically significant for auto thefts, burglaries, robberies, and aggravated assaults and was marginally significant for murder.<sup>160</sup> Levitt estimated that the COPS program increased the number

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<sup>151</sup> *Id.* at 168.

<sup>152</sup> Hope Corman & H. Naci Mocan, *A Time-Series Analysis of Crime, Deterrence, and Drug Abuse in New York City*, 90 AM. ECON. REV. 584, 586-87 (2000).

<sup>153</sup> *Id.* at 595-601.

<sup>154</sup> Richard Rosenfeld et al., *Did Ceasefire, Compstat, and Exile Reduce Homicide?*, 4 CRIMINOLOGY & PUB. POL'Y 419, 428 (2005).

<sup>155</sup> *Id.* at 431, 432 fig.1.

<sup>156</sup> *See id.* at 431-33.

<sup>157</sup> Evans & Owens, *supra* note 119, at 181.

<sup>158</sup> *Id.*

<sup>159</sup> *Id.* at 195-99 tbls.5 & 6.

<sup>160</sup> *Id.* at 195.

of police officers per capita by 14% during the 1990s.<sup>161</sup> He further estimated that the increase in the number of police during this time period was responsible for a 5% to 6% reduction in crime, accounting for between one-fifth and one-tenth of the overall drop in crime.<sup>162</sup>

To be fair, not all scholars agree with Levitt's assessment. John Eck and Edward Maguire published an extensive review of the existing research on the relationship between the number of police officers and crime rates and whether police force size was related to the downturn in crime.<sup>163</sup> Two interesting things came out of their review. First, they were struck with the general lack of quality in a great deal of this research. Out of forty-one studies that they identified as helpful in dealing with the issue, they found only nine that dealt rigorously enough with methodological problems to come to a confident conclusion.<sup>164</sup> Second, based upon their review of these nine studies, they concluded that the police had no real effect on the drop in crime over the 1990s: "[T]he research suggests that hiring more police officers did not play an independent or consistent role in reducing violent crime in the United States."<sup>165</sup>

In addition to this research on police presence, a substantial body of literature examines the deterrent effect of particular police practices on the crime rate, such as "police crackdowns" on certain kinds of crime or intensive law enforcement in high-crime areas known as "hot spots."<sup>166</sup> The idea behind police crackdowns and hot-spot policing is to increase the certainty of arrest and punishment for particular crimes or particular

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<sup>161</sup> Levitt, *supra* note 132, at 177.

<sup>162</sup> *Id.* at 177.

<sup>163</sup> ECK & MAGUIRE, *supra* note 134.

<sup>164</sup> *Id.* at 217.

<sup>165</sup> *Id.*

<sup>166</sup> See generally DAVID M. KENNEDY, DETERRENCE AND CRIME PREVENTION: RECONSIDERING THE PROSPECT OF SANCTION (2009); Mark A.R. Kleiman, *The Effect of Intensive Enforcement on Retail Heroin Dealing*, in STREET-LEVEL DRUG ENFORCEMENT: EXAMINING THE ISSUES 3 (Marcia R. Chaiken ed., 1988); Lawrence W. Sherman, *Police Crackdowns: Initial and Residual Deterrence*, in 12 CRIME AND JUSTICE: A REVIEW OF RESEARCH 1 (Michael Tonry & Norval Morris eds., 1990); Lawrence W. Sherman, *Policing for Crime Prevention*, in EVIDENCE-BASED CRIME PREVENTION 295 (Lawrence W. Sherman et al. eds., 2002); Anthony A. Braga, *Hot Spots Policing and Crime Prevention: A Systematic Review of Randomized Controlled Trials*, 1 J. EXPERIMENTAL CRIMINOLOGY 317 (2005); Christopher S. Koper & Evan Mayo-Wilson, *Police Crackdowns on Illegal Gun Carrying: A Systematic Review of Their Impact on Gun Crime*, 2 J. EXPERIMENTAL CRIMINOLOGY 227 (2006); David Weisburd, *Hot Spots Policing Experiments and Criminal Justice Research: Lessons from the Field*, 599 ANNALS AM. ACAD. POL. & SOC. SCI. 220 (2005); Mark A. R. Kleiman, *Bringing Back Street-Level Heroin Enforcement* (John F. Kennedy Sch. of Gov't, Program in Criminal Justice Policy and Mgmt., Working Paper No. 80-01-08, 1986).

geographic areas with greatly intensified police activity.<sup>167</sup> For example, if there is a two-block area in a given city in which the crime rate is particularly high (prostitution, drug sales, robberies), extra police could be assigned, traffic flow restricted, an on-site booking facility set up, and a cleaning up of vacant areas and abandoned buildings, all in a concerted effort to bring additional law enforcement muscle to the area. One would expect the increased police presence and law enforcement activity to increase the perception among would-be offenders that the certainty and severity of sanctions has increased and that, as a result of these changed perceptions, crime will be deterred.<sup>168</sup> Reviews of this literature are more optimistic than definitive. Many studies are simply too poorly conducted to draw precise or even realistic assessments about whether the particular police effort deterred crime. Many studies, in fact, show that even with massive police effort the return in reduced crime is marginal.<sup>169</sup> At least some of these studies show that crime is reduced in a given area while the crack-down or enhanced police presence exists, but that crime quickly returns to its pre-intervention level soon after the program ends.

Interestingly, these studies frequently show that there is evidence of crime displacement, whereby crime increases in areas geographically proximate to the targeted area.<sup>170</sup> What program evaluators must do, therefore, is balance the deterrent effects achieved in one area with the crime displacement effects that occur in other areas. Although troubling from a policy perspective, that criminals simply “move around the corner” in response to increased police presence to commit crime in another area is perfectly compatible with (and indeed expected by) deterrence theory and the belief in a rational offender.<sup>171</sup> A reasoning offender would respond to the increased probability of legal sanctions in one area by relocating to an area with a lower certainty of apprehension. The rational offender would then return to his normal “haunts” once the extra police activity brought on by the crackdown in the original area is removed.<sup>172</sup> Those committing

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<sup>167</sup> KENNEDY, *supra* note 166, at 10-11.

<sup>168</sup> *Id.*

<sup>169</sup> *See generally id.*; Richard A. Berk, Reaction Essay, *Knowing When to Fold 'Em: An Essay on Evaluating the Impact of Ceasefire, Compstat, and Exile*, 4 CRIMINOLOGY & PUB. POL'Y 451 (2005); Rosenfeld et al., *supra* note 154. For an example, see the evaluations of the Boston youth violence crackdown known as “Operation Ceasefire.” *See* KENNEDY, *supra* note 166, at 8; Berk, *supra* note 169, at 455-59; Rosenfeld et al., *supra* note 154, at 434-35.

<sup>170</sup> David Weisburd & John E. Eck, *What Can Police Do to Reduce Crime, Disorder, and Fear?*, 593 ANNALS AM. ACAD. POL. & SOC. SCI. 42, 52 (2004).

<sup>171</sup> David Weisburd et al., *Does Crime Just Move around the Corner?: A Controlled Study of Spatial Displacement of Crime Control Benefits*, 44 CRIMINOLOGY 549 (2006).

<sup>172</sup> Nagin, *supra* note 77, at 9-11.

crimes in the targeted area may rationally reduce their level of offending until they notice that the risk is either not as great as they thought or police enforcement has slackened or withdrawn.<sup>173</sup>

What can we say about this very copious body of research on both the number of police and policing styles intended to deter crime? Unfortunately, nothing precise. It is undoubtedly true that increasing the number of police officers who patrol an area does lower the amount of crime in that area, targeted police work with enhanced activity likely lowers crime, and at least some part of the "great crime drop" can be attributed to an increase in the number of police officers added to the force as a result of federal funding. But even these very minimal conclusions must be taken with a healthy dose of skepticism, and we can say with even less confidence *how much* deterrent effect extra police officers and targeted policing have had.

We should conclude that it is only *probably* true that added police contributed to the crime drop for several reasons. First, from 1990 to 2000, in addition to an increase in the number of police officers in many U.S. cities, there was also great experimentation with different policing strategies. It is difficult to disentangle the impact of more police from the impact of what those police were doing.<sup>174</sup> Second, while it is true that crime rates dropped while cities were adding more police officers to their force—including the greatest decline in New York City, which also had the greatest increase in number of police officers—the relationship between more police and a reduction in crime is not always clear.<sup>175</sup> Figure 3 shows the percent change in the number of police per 100,000 residents and the percent change in the rate of violent index crime for a selection of U.S. cities over the years 1990-2000. While many cities saw an increase in the number of police and a corresponding reduction in violent crime, this was not always the case. For example, San Diego experienced approximately a 45% decline in violent crime with only a 1% increase in its police force.<sup>176</sup> Dallas saw more than a 40% reduction in violent crime along with an 8% *reduction* in the size of its police force.<sup>177</sup> Seattle saw a sizable reduction in crime (about 44%) with a 9% reduction in its police force. Philadelphia had a 10% increase in its police per capita but an equally sized increase in crime.<sup>178</sup> Baltimore had a 20% increase in its police with no discernable

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<sup>173</sup> *Id.*

<sup>174</sup> ZIMRING, *supra* note 129, at 149-52.

<sup>175</sup> See REAVES & HICKMAN, *supra* note 131.

<sup>176</sup> *Id.* app. A at 10, app. D at 13.

<sup>177</sup> *Id.*

<sup>178</sup> *Id.*

effect on crime.<sup>179</sup> Clearly, while the number of police can influence the amount of crime a city experiences, we do not know how much it matters, and other things seem to matter a great deal as well.

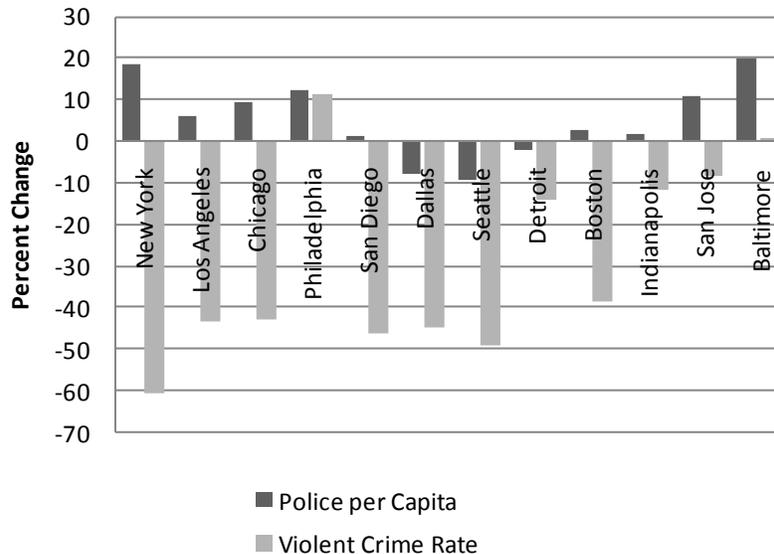
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**Figure 3**

*Percent Change 1990-2000 in the Number of Sworn Police and the Violent Crime Rate (per 100,000)*




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Source: Bureau of Justice Statistics Special Report. Police Departments in Large Cities, 1990-2000. May 2002. Washington, D.C.: U.S. Department of Justice.

New York City did observe the most dramatic decline in its crime rate of any U.S. city from 1990 to 2000, and it did so while increasing the size of its police force more than any other city. It also introduced new police strategies such as COMPSTAT and “zero tolerance” policies. However, questions have been raised about the veracity of the NYPD’s crime statistics program under COMPSTAT.<sup>180</sup> A survey given to a group of more than one hundred retired NYPD captains and higher ranking officers indicated that they were aware of consistent and non-trivial efforts to produce lower crime statistics by “down-grading” citizen reports. Down-grading can entail either deliberately not recording certain crimes or putting

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<sup>179</sup> *Id.*

<sup>180</sup> William K. Rashbaum, *Retired Officers Raise Questions on Crime Data*, N.Y. TIMES, Feb. 7, 2010, at A1.

pressure on citizens to withdraw their reports.<sup>181</sup> Part of COMPSTAT's program was to make individual police precinct commanders responsible for reductions of crime in their area to the point that people perceived that careers were at stake if crime did not go down. Many who responded to the survey complained that city officials put great pressure on individual precinct commanders to reduce crime by any way possible.<sup>182</sup> In the past, eleven police officials including four precinct commanders were disciplined by the department for attempting to tamper with crime statistics.<sup>183</sup> In fairness, it must be mentioned that the COMPSTAT system had been independently reviewed by the state comptroller and a New York University professor who both concluded that the NYPD crime data were accurate and reliable.<sup>184</sup> In addition, even conceding that police meddling with citizen complaints may have occurred, in order to have substantially contributed to a large share of the crime drop, the "fudging" of police statistics would have to have been done in virtually every major and mid-sized U.S. city since the crime drop occurred everywhere.<sup>185</sup>

There is one other general point to be made here about how much one can attribute the crime drop in the United States to policies of the criminal justice system including enhanced police presence. Following Zimring's advice that comparisons of U.S. and Canadian crime statistics are instructive, Figure 4 shows the rate of violent and property crime for Canada over the years 1962-2008, and Figure 5 shows the homicide rate for Canada and the United States.<sup>186</sup> Much like the United States, Canada experienced a rise in crime that peaked in the early 1990s. From 1990 to 2000, Canadian crime rates fell as did those in the United States, though not by as much for violent crimes. From 1990 to 2000, the Canadian violent crime rate fell by 10% while its property crime rate fell by 45%. It is perhaps more instructive to compare particular crime categories for the United States and Canada (Table 1). With the exception of auto theft, the general crime drop experienced by Canada is comparable to that found in the United States. From 1990 to 2000, the homicide rate declined by 39% in the United States and by 34% in Canada, and the rape rate declined by 22% in both countries. Robberies decreased more in the United States than

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<sup>181</sup> *Id.*

<sup>182</sup> *Id.* Complaints about police officials lowering crime by "cooking the books" have been made about other city police departments such as Atlanta, Baltimore, Dallas, New Orleans, and Washington. *Id.*

<sup>183</sup> Rashbaum, *supra* note 180, at A1.

<sup>184</sup> *Id.*

<sup>185</sup> *Id.*

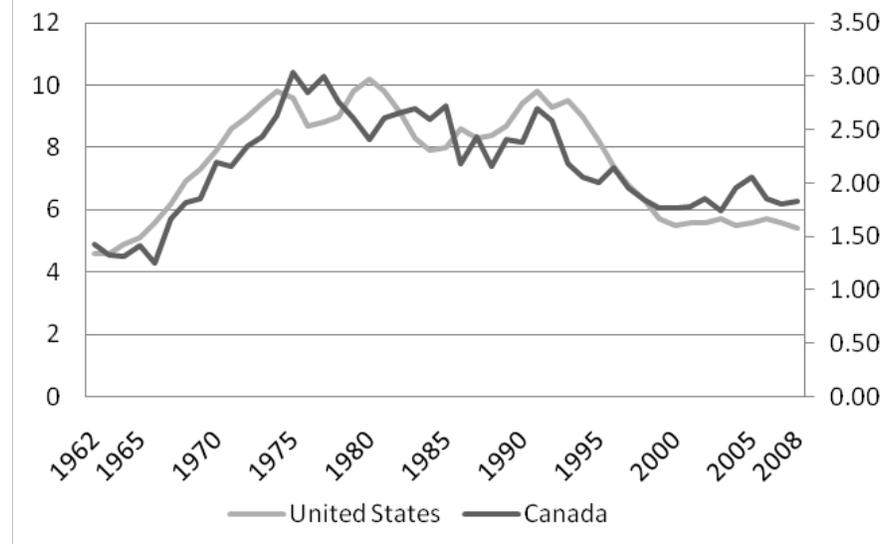
<sup>186</sup> SARA BEATTIE & AMY MOLE, CANADIAN CTR. FOR JUSTICE STATISTICS, POLICE RESOURCES IN CANADA, 2007 15 (2007); *see also* ZIMRING, *supra* note 129, at 107-34.

**Figure 4**  
*Rate of Violent and Property Crime in Canada, 1962-2008*



Source: Canadian Center for Justice Statistics

**Figure 5**  
*Homicide Rate in the United States and Canada, 1962-2008*



Source: Uniform Crime Reports and Canadian Centre for Justice Statistics.

**Table 1**  
*Changes in Crime in United States and Canada, 1990-2000*<sup>187</sup>

	United States	Canada
Homicide	-39%	-34%
Rape	-22%	-22%
Aggravated Assault	-24%	-62%
Robbery	-44%	-13%
Burglary	-41%	-30%
Auto Theft	-37%	26%
Larceny	-23%	-39%

Canada (-44% compared to -13%), as did burglaries (-41% compared to -30%), but for both aggravated assault (-24% for the United States and -62% for Canada) and larcenies (-23% for the United States and -39% for Canada), the crime drop was greater in Canada.<sup>188</sup>

The interesting thing about Figures 4 and 5 and Table 1 is that Canadian property and violent crime rates fell at about the same time and level of magnitude and with the same duration as the rates in the United States, but Canada experienced a 10% *decline* in the number of police officers per 100,000 residents from 1990 to 2000.<sup>189</sup> Compare the 1980-2000 property and violent crime rates for Canada in Figure 4 and the homicide rate in Figure 5 with the trend in police per 100,000 residents reported in Figure 6. Crime was declining in Canada at a time when the number of police officers per capita was also *declining*, unlike the case for the United States. It is not likely that an increase in the presence of the police in the United States had a spill-over effect on Canadian crime rates. Other more general but not yet identified or understood factors must have been operating.<sup>190</sup> These data undermine any bold assertion that the great crime decline in the United States was unequivocally due to the deterrence provided by more police. While it is *likely* true that crime came down in the United States due to more police, it really is not clear at all the extent of police's role in deterrence. What we are left with, then, is that clearly police presence deters crime, but it is probably very difficult to say with any degree of precision how much it deters. Let us take Levitt's estimate as a reasonable guess that increasing the size of the police force by 10% will reduce crime by about 4% or 5%.<sup>191</sup>

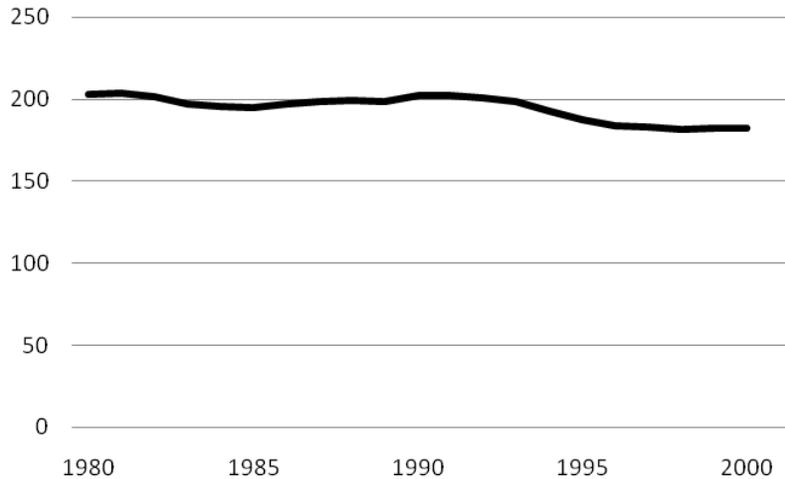
<sup>187</sup> Zimring, *supra* note 129, at 16 tbl 1.3.

<sup>188</sup> BEATTIE & MOLE, *supra* note 186, at 108 fig.5.1.

<sup>189</sup> *Id.* at 15.

<sup>190</sup> ZIMRING, *supra* note 129, at 131-32.

<sup>191</sup> Levitt, *supra* note 132, at 177.

**Figure 6***Police per 100,000 population in Canada, 1980-2000*

Source: Beattie and Mole, 2007.

#### B. THE ROLE OF IMPRISONMENT IN DETERRENCE

One of the most substantial punishments that the criminal justice system has in its arsenal of sanctions is imprisonment. Going to prison is a costly and painful possible outcome of committing crime. If the deterrence doctrine is true, there should be an inverse relationship between the use of imprisonment and crime. For example, the economist Steven Levitt conducted a very clever and convincing study of the relationship between imprisonment and crime rates.<sup>192</sup> He was fully aware of the problem of simultaneity between imprisonment and crime rates (they can mutually affect each other) and so used prison overcrowding legislation in a state (court orders to reduce overcrowding) to act as an instrumental variable for changes in the probability of imprisonment. Court orders to reduce overcrowding in some state prison systems led to a substantial reduction in the number of inmates and thus a decline in the probability of a convicted offender going to prison.<sup>193</sup> Using data that covered the years 1971-1993, Levitt concluded that likelihood of imprisonment had a non-trivial crime reduction effect. He estimated that each additional man-year of

<sup>192</sup> Steven D. Levitt, *The Effect of Prison Population Size on Crime Rates: Evidence from Prison Overcrowding Litigation*, 111 Q. J. ECON. 319 (1996).

<sup>193</sup> *Id.* at 330-44, 348.

imprisonment resulted in the reduction of fifteen index crimes.<sup>194</sup> It is not entirely clear from Levitt's analysis, however, how much of the crime avoided was due to deterrence and how much to incapacitation—the fact that high-rate offenders get locked up and cannot commit crimes. Other estimates of the effect of prison on crime come from Spelman, who argued that the “elasticity” of crime with respect to incarceration is between -0.2 and -0.4.<sup>195</sup> “Elasticity” is a statistical way of expressing the effect of a change in one factor on the change in another. An elasticity of -0.2 indicates that a 10% increase in incarceration would result in a 2% decline in crime.<sup>196</sup>

We can also study the relationship between changes in the rate of incarceration and crime rates over time to give us some sense as to whether imprisonment acts as a deterrent to crime. Recall that from the early 1990s until the present day the crime rate in the United States dramatically declined. The rate of imprisonment during this same period also increased rather dramatically, by some 52%. Figure 7 shows the index violent crime and homicide rates in the United States from 1980 to 2008 along with the rate of incarceration. It shows that the decline in serious crime and the most serious crime (homicide) came during a period when the incarceration rate was doubling.<sup>197</sup> One can look at this figure and be led easily to think that perhaps some part of the great crime drop was due to the increase in incarceration.

A great deal of scholarly interest has been directed at trying to understand the relationship between the great crime drop and the increased use of imprisonment. There are excellent summaries of this literature available,<sup>198</sup> and I am again selective here. There is a general consensus that the decline in crime is, at least in part, due to more and longer prison sentences, with most of the controversy being over how much of an effect imprisonment had. After an extensive empirical analysis, Spelman concluded that between 4% and 21% of the crime drop could be attributed to the expansion of incarceration.<sup>199</sup> Levitt concluded that the increase in

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<sup>194</sup> *Id.* at 345-46.

<sup>195</sup> William Spelman, *What Recent Studies Do (and Don't) Tell Us About Imprisonment and Crime*, 27 *CRIME & JUST.* 419, 485 (2000).

<sup>196</sup> *Id.*

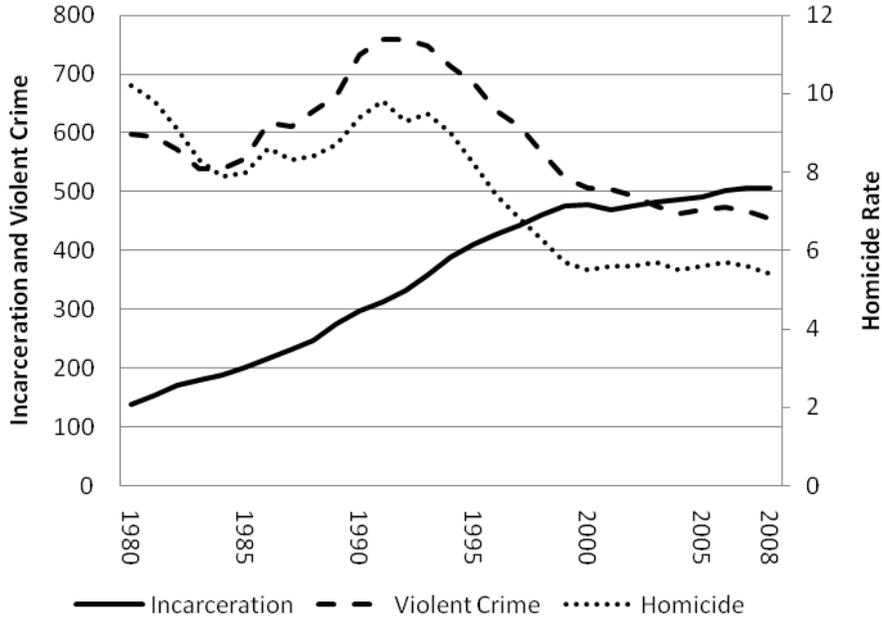
<sup>197</sup> BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, REPORTED CRIME IN UNITED STATES-TOTAL, <http://bjsdata.ojp.usdoj.gov/dataonline/Search/Crime/State/statebystaterun.cfm?stateid=52> (last visited July 9, 2010) (crime data); BUREAU OF JUSTICE STATISTICS, U.S. DEP'T OF JUSTICE, TOTAL CORRECTIONAL POPULATION, <http://bjs.ojp.usdoj.gov/index.cfm?ty=tp&tid=11> (last visited July 9, 2010) (incarceration data).

<sup>198</sup> See generally BLUMSTEIN & WALLMAN, *supra* note 128.

<sup>199</sup> Spelman, *supra* note 195, at 109.

**Figure 7**

*Rate of Incarceration, Violent Crime, and Homicide in the United States 1980-2008*



Source: Uniform Crime Reports, 2008. Bureau of Justice Statistics, 2010.

the use of imprisonment from 1990 to 2000 was responsible for about one-third of the declining crime rate.<sup>200</sup>

In other words, both authors would agree that some part of the decline in crime since the 1990s was due to the increased use of incarceration in the United States, and that we can attribute anywhere from 20% to 30% of the crime drop to imprisonment. As was the case with the role of police presence in reducing crime, however, I would suggest some caution and humility in accepting these conclusions. First, it is probably very safe to say that the threat of imprisonment does indeed act as a general deterrent and *probably* is responsible for *some share* of the recent crime drop. I say *probably* and *some share* because, as with the role of more police, it is really difficult to make any more definitive conclusions about the deterrent effect of imprisonment for four reasons.

First, the evidence to date is consistent with the fact that putting more people in prison can, to some degree, lower the crime rate, but it is not clear

<sup>200</sup> Levitt, *supra* note 132, at 178-79.

how this crime reduction occurs. Putting more people behind bars can reduce crime by deterring them but also by incapacitating high-rate offenders. While it may be true that increased imprisonment does lower crime, it is far more difficult to say with any authority how much of that crime reduction is due to deterrence and how much to incapacitation. For policy purposes, I readily admit that it probably does not make much difference why crime goes down in response to greater incarceration, but if one is trying to determine the causal mechanisms behind the decline it certainly does. Further, one could argue that since both the probability of imprisonment and the length of imprisonment increased since the 1990s, both deterrence and incapacitation are equally compelling explanations.<sup>201</sup>

Second, any explanation that the crime drop of the 1990s should be attributed to the increased use of incarceration certainly would have to explain how that is compatible with the earlier time trend for incarceration and crime shown in Figure 6. In the decade from the early 1980s to the early 1990s, the rate of violent crime was *rising* while the incarceration rate was doubling. If a greater reliance on incarceration reduces crime by deterrence (or even incapacitation), why did it take so long to have any effect on the crime rate?

Third, one also needs to explain why if imprisonment was responsible for lowering the crime rate in the United States from 1990 to 2000, Canada had an almost equally impressive decline in crime without a huge expansion of incarceration like that in the United States? The rate of incarceration in Canada *declined* by about 10% from 1993 to 2001, at about the same time that U.S. rates were doubling, and both countries experienced a substantial reduction in crime.<sup>202</sup>

Fourth, before one can unambiguously conclude that the policies of the criminal justice system, such as increased incarceration (and increased police presence), lowered the crime rate through deterrence, one has to be confident that another link in the deterrence process exists—that between the objective and perceptual properties of punishment. For something like increased incarceration or increased law enforcement to have a general deterrent effect, would-be offenders would have to be aware of the heightened risk. In the absence of a relationship between the objective and perceptual properties of punishment, confidence in general deterrence as the

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<sup>201</sup> Marc Mauer, *The Hidden Problem of Time Served in Prison*, 74 SOC. RES. 701, 701-02 (2007); see also Steven D. Levitt, *Why Do Increased Arrest Rates Appear to Reduce Crime: Deterrence, Incapacitation, or Measurement Error?*, 36 ECON. INQUIRY 353 (1998).

<sup>202</sup> SARA JOHNSON, CANADIAN CTR. FOR JUSTICE STATISTICS, ADULT CORRECTIONAL SERVICES IN CANADA (2004), available at <http://dsp-psd.communication.gc.ca/Pilot/Statcan/85-002-XIE/0100485-002-XIE.pdf>.

main causal mechanism responsible for driving down the crime rate would be shaken. It is to this connection that I turn next.

#### V. THE LINK BETWEEN THE OBJECTIVE AND PERCEPTUAL PROPERTIES OF PUNISHMENT

If criminal justice practices, such as enhanced police activity in particular areas or the increased use of incarceration, have a general deterrent effect on criminal activity, it must be because there is a causal link between the objective and perceptual properties of punishment. As Ball wrote in his paper that appeared in the *Journal*, the “deterrent effect of a law obviously depends upon the individual’s knowledge of the law and the punishment prescribed.”<sup>203</sup> An important component of the deterrence doctrine, and the criminal justice system itself, is that persons are aware of actual punishment practices and are aware of changes in those practices when they occur. This does not mean that the correlation must be unity, but certainly one should expect to see at least a robust correlation between the objective and perceptual properties of punishment. Phillip Cook similarly argued that although the public’s perceptions of sanction threats “are not accurate, [they] do tend to be systematically related to criminal justice system activities.”<sup>204</sup> Interestingly, if the correlation is moderate to large, then aggregate-level studies that relate the objective properties of punishment to crime rates do provide valid insight into the deterrence process, but perceptual studies about deterrence were initiated in part because of skepticism about this causal link. One would also expect that one’s perceptions of punishment are not immutable but change in response to changes in objective conditions and changes in that person’s experiences. In other words, while a person’s current perceptions are certainly related to some prior set of perceptions, they are nonetheless updated in response to new information if persons behave rationally.

The expected robust correlation between the objective and perceptual properties of punishment, and the updating of perceptions in response to new information about risks and magnitudes of punishments, would seem to be core assertions at the heart of deterrence theory. There is evidence that would-be offenders are not completely unmindful of the objective risks and costs they run if they commit crimes, but the correlations are rather meager and must be disappointing to believers in deterrence. In fact, one of the “dirty little secrets” of deterrence is that there really is not much evidence in

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<sup>203</sup> Ball, *supra* note 65, at 351.

<sup>204</sup> Phillip Cook, *Research in Criminal Deterrence: Laying the Groundwork for the Second Decade*, in 2 CRIME & JUSTICE: AN ANNUAL REVIEW OF RESEARCH 211, 222 (Norval Morris & Michael Tonry eds., 1980).

support of a strong correlation between the objective and subjective properties of punishment. Perhaps the more unfortunate fact is that although this may be one of the most crucial links in the deterrence process, it is the one that we know the least about.

What evidence do we have about how would-be offenders perceive legal sanctions? Two early studies conducted in California lead to the conclusion that the public does not know very much about the maximum and minimum punishments provided by law for different offenses, nor is the public very aware of any changes to those punishments, and inmates of California prisons were only slightly more informed.<sup>205</sup> Anderson also found that convicted felons who had been imprisoned were unmindful of the possible consequences: 18% reported that they no idea what the penalty would be for their criminal act, and another 35% stated that they didn't even consider the possible penalty before committing the crime that got them into prison.<sup>206</sup> Many ethnographic accounts of offenders also suggest that in deciding whether or not to commit a crime, the probability of getting caught and the severity of punishment are not well known.<sup>207</sup>

Another thing researchers have discovered is that offenders do not see increments in punishment in the same way that they are intended to see them. Because people have what economists call subjective discount rates (a point that is returned to at the conclusion of this Article), they reduce in their minds the cost of things that are more distant in time (much like we do when we reduce the "pain" of buying something by using a credit card rather than cash). To demonstrate this, Kent A. McClelland and Geoffrey P. Alpert asked a sample of 152 recently arrested persons to provide estimates for several different types and levels of legal punishments.<sup>208</sup> Consistent with subjective discounting, they found that a five-year prison sentence was rated to be only twice as severe as a one year sentence, and a twenty-year sentence was judged to be just a little more than one-half times

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<sup>205</sup> See CAL. ASSEMBLY COMM. ON CRIMINAL PROCEDURE, DETERRENT EFFECTS OF CRIMINAL SANCTIONS (1968); Zimring & Hawkins, *supra* note 81, at 143.

<sup>206</sup> David A. Anderson, *The Deterrence Hypothesis and Picking Pockets at the Pickpocket's Hanging*, 4 AM L. & ECON. REV 295, 305 (2002).

<sup>207</sup> See NEAL SHOVER, GREAT PRETENDERS: PURSUITS AND CAREERS OF PERSISTENT THIEVES 151-74 (1996); KENNETH D. TUNNELL, CHOOSING CRIME: THE CRIMINAL CALCULUS OF PROPERTY OFFENDERS 60-85 (1992); RICHARD T. WRIGHT & SCOTT H. DECKER, BURGLARS ON THE JOB: STREETLIFE AND RESIDENTIAL BREAK-INS 127-33 (1994); RICHARD T. WRIGHT & SCOTT H. DECKER, ARMED ROBBERS IN ACTION: STICKUPS AND STREET CULTURE 59-60 (1997).

<sup>208</sup> Kent A. McClelland & Geoffrey P. Alpert, *Factor Analysis Applied to Magnitude Estimates of Punishment Seriousness: Patterns of Individual Differences*, 1 J. QUANTITATIVE CRIMINOLOGY 307, 309-10 (1985).

more severe than a ten-year sentence.<sup>209</sup> In a later study, Eleni Apospori and Alpert reported that a sample of arrested offenders perceived a ten-year prison sentence as only four times more severe than a one-year sentence, a twenty-year sentence only six times more severe, and a twenty-year sentence was judged to be less than one and one-half times more severe than a ten-year sentence.<sup>210</sup>

There is other evidence to suggest that would-be offenders' perceptions of the certainty and severity of punishment are not strongly related to the objective properties of punishment and are, therefore, not likely to be very accurate nor responsive to policy changes. Irving Piliavin and colleagues found that a measure of the perceived risk of formal punishment was unrelated to a respondent's prior arrests and convictions.<sup>211</sup> Julie Horney and Ineke Haen Marshall found that the total number of arrests an individual had accumulated and whether a person had been arrested for every criminal offense he or she had committed were unrelated to perceptions of the certainty of arrest.<sup>212</sup>

Most damaging of all to deterrence theory is a study by Gary Kleck and colleagues.<sup>213</sup> They interviewed 1,500 adult residents of fifty-four large urban counties and asked them about their perceptions of the certainty, severity, and celerity of punishment in their county.<sup>214</sup> An example of a question about the perceived certainty of punishment measure was: "In the past 10 years in your county, out of every 100 robberies known to the police, about how many do you think resulted in the arrest of the robber?"<sup>215</sup> One measure of perceived severity was: "Out of every 100 persons convicted of robbery in your county, about how many do you think are given a jail or prison sentence?"<sup>216</sup> For the celerity of punishment: "For persons convicted of robbery, what do you think is the average amount of time that passes between the day the offender is arrested and the day they were sentenced in court?"<sup>217</sup> Comparable county-level measures of the

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<sup>209</sup> *Id.* at 311-14.

<sup>210</sup> See Eleni Apospori & Geoffrey Alpert, Research Note, *The Role of Differential Experience with the Criminal Justice System for Changes in Perceptions of Severity of Legal Sanctions over Time*, 39 CRIME & DELINQ. 184, 189 (1993).

<sup>211</sup> Irving Piliavin et al., *Crime, Deterrence, and Rational Choice*, 51 AM. SOC. REV. 101, 114 (1986).

<sup>212</sup> Julie Horney & Ineke Haen Marshall, *Risk Perceptions Among Serious Offenders: The Role of Crime and Punishment*, 30 CRIMINOLOGY 575, 586 (1992).

<sup>213</sup> Gary Kleck et al., *The Missing Link in General Deterrence Research*, 43 CRIMINOLOGY 623 (2005).

<sup>214</sup> *Id.* at 635-36.

<sup>215</sup> *Id.* at 634.

<sup>216</sup> *Id.*

<sup>217</sup> *Id.* at 635.

objective levels of the certainty, severity, and celerity of punishment in the county were obtained from the Bureau of Justice Statistics and Uniform Crime Reports.<sup>218</sup> The important question that Kleck and colleagues asked was whether persons had higher perceptions of the certainty, severity, and celerity of punishment in counties where the actual levels were higher. They did not. The correlations between perceived and actual punishment levels were consistently weak, averaging a Pearson's correlation of 0.02, and none was larger than 0.13.<sup>219</sup> At the bivariate level, less than 2% of the variance in perceived sanction threats was explained by actual levels of sanctions.<sup>220</sup> This null finding was true when the full sample of respondents was stratified into those who had at least one prior arrest (the "experienced") and those with no prior arrests.<sup>221</sup> In multivariate analysis, county-level measures of punishment characteristics were unrelated to individual perceptions of sanction threats.<sup>222</sup> This was true for each different measure of certainty, severity, and celerity of punishment and for each of four different offenses (homicide, robbery, assault, burglary) studied. The variance explained in these multivariate models were all very small, with the largest being 0.08.<sup>223</sup>

Lance Lochner argued that a person's perceptions about the certainty of arrest should depend upon "an individual's own (past) criminal behavior and arrest outcomes, the criminal and arrest outcomes of others around him, and more general signals that may come from local arrest rates or neighborhood conditions."<sup>224</sup> He examined this deterrence hypothesis with two different data sets—the National Youth Survey (NYS) and the National Longitudinal Survey of Youth (NLSY97).<sup>225</sup> Estimating an ordinary least squares regression model with the perceived probability of arrest for auto theft in the NLSY97 as the dependent variable, Lochner found that the objective certainty of punishment as measured by the country-level arrest rate for auto theft was *unrelated to the perceived level of certainty*.<sup>226</sup> Even more disturbing for deterrence theory is the fact that Lochner was only able to explain 3% of the variance in the perceived certainty of arrest.<sup>227</sup> There

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<sup>218</sup> *Id.* at 633-34.

<sup>219</sup> *Id.* at 642.

<sup>220</sup> *Id.*

<sup>221</sup> *Id.* at 643 tbl.2.

<sup>222</sup> *Id.* at 645-51 tbls.3, 4, 5, 6, 7, 8 & 9.

<sup>223</sup> *Id.* at 647 tbl.5.

<sup>224</sup> Lance Lochner, *Individual Perceptions of the Criminal Justice System*, 97 AM. ECON. REV. 444, 445 (2007).

<sup>225</sup> *Id.* at 444.

<sup>226</sup> *Id.* at 450.

<sup>227</sup> *Id.* at 449 tbl.2.

was no measure of the local objective arrest rate in the NYS, but Lochner found that the perceived probability of arrest was unrelated to the perception that crime or disorder was a problem within one's neighborhood. Like the analysis of the NLSY97 data, the amount of explained variance in perceptions was very small, from 4% to less than 1%.<sup>228</sup>

Horney and Marshall's, Piliavin et al.'s, Kleck et al.'s, and Lochner's studies not only show that there is not a strong relationship between objective sanctions and perceived sanctions; in none of these were the researchers able to explain much of the variance in perceived sanction threats. Piliavin and colleagues explained only 7% of the variance in their measure of formal sanction risk.<sup>229</sup> In Horney and Marshall's study, the explained variance of the perceived risk measures varied by offense but only ranged from 0.05 to 0.13.<sup>230</sup> Kleck et al.'s study also varied by offense and only ranged between 4% and 8%.<sup>231</sup> Lochner explained only 3% of the variance in his model of perceived punishment.<sup>232</sup>

This inability to explain much of the variance in perceptions of sanction threats is another dirty little secret in deterrence research. What makes this more remarkable is that in each of the studies mentioned above, the models are fairly well-specified with appropriate right-hand-side variables that theoretically should matter. In addition, it is not as if predictions of future states are difficult to explain, as scholars have been able to better explain other kinds of perceptions, such as perceptions of college attendance, fertility, smoking, and mortality.<sup>233</sup> We really do not know very much about how perceptions of punishment are formed, and we are no better informed than we were when Daniel S. Nagin concluded ten years ago that "[t]he literature on the formation of sanction risk perception is small and narrow in scope."<sup>234</sup> However, it is not only an important theoretical question about deterrence, but it has critical policy significance. If perceptions of sanction threats are not directly tied to objective practices

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<sup>228</sup> *Id.* at 452 tbl.4

<sup>229</sup> Piliavin, *supra* note 211, at 111 tbl.4.

<sup>230</sup> Horney & Marshall, *supra* note 212, at 584 tbl.2.

<sup>231</sup> Kleck et al., *supra* note 213, at 647 tbl.5.

<sup>232</sup> Lochner, *supra* note 224, at 227. The models of Matsueda et al. are also consistent with Horney & Marshall's, Lochner's, and Kleck's in that the amount of explained variance of perceptions of punishment were low (ranging between 0.03 and 0.26), even with lagged values of the dependent variable in the model. Ross Matsueda et al., *Detering Delinquents: A Rational Choice Model of Theft and Violence*, 71 AM. SOC. REV. 95, 108-09 tbl.2 (2006).

<sup>233</sup> Wandu Bruine de Bruin et al., *Can Adolescents Predict Significant Life Events?*, 41 J. ADOLESCENT HEALTH 208 (2007); Baruch Fischhoff et al., *Teen Expectations for Significant Life Events*, 64 PUB. OPINION Q. 189 (2000); Michael Schoenbaum, *The Accuracy of Teens' Expectations of Future Smoking*, 28 AM. J. PREVENTIVE MED. 274 (2005).

<sup>234</sup> Nagin, *supra* note 77, at 17.

in the criminal justice system, then they will not be responsive to or easily manipulated by criminal justice policy.

We do not know very much about how perceptions are formed, but, in a bit of good news for deterrence theory, we do know that once formed perceptions are modified by experiences, both one's own experiences and the experiences of others. This is good news for deterrence theory because people have shown themselves to be capable Bayesians. Prior perceptions of the risk of punishment are generally modified downward when people commit crimes and get away with it—this has been called the “experiential effect” in the literature.<sup>235</sup> People also generally increase their perceptions of the risk of punishment when they do get caught.<sup>236</sup> Lochner also found that, in both the NYS and NLSY97 datasets, there was evidence of updating of perceptions in response to one's own behavior—those who committed crimes and were not arrested had lower perceptions of the certainty of punishment.<sup>237</sup> What was interesting, however, is that while there was a significant relationship between arrests for a serious crime and perceived certainty, it was insignificant when arrest for *any* offense was used. This implies that attempts by authorities to crack down on minor crimes in “zero tolerance” campaigns are not likely to spill over to affect beliefs about the probability of arrest for more serious crimes.<sup>238</sup>

Finally, Shamena Anwar and Thomas A. Loughran estimated a Bayesian model of perceptual updating on the basis of one's experience.<sup>239</sup> An important characteristic of their research is that it was conducted with a high-risk sample of offenders—youth who have been convicted, either in juvenile or adult court, of a serious felony offense.<sup>240</sup> They too found that the experience of an arrest increased one's risk perceptions, although the magnitude of the effect was rather modest. An individual who committed a crime and was arrested for it increased his or her perceptions of the

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<sup>235</sup> Saltzman et al., *supra* note 98, at 180-84.

<sup>236</sup> See Horney & Marshall, *supra* note 212, at 584 tbl.2; Lochner, *supra* note 224, at 454 tbl.5; Matsueda et al., *supra* note 232, at 111.

<sup>237</sup> Contrary evidence was found by Pogarsky and colleagues who reported that those who had experienced an arrest had lower perceptions of the risk of punishment compared with those not arrested. They analogized this to the “gambler's fallacy” whereby once arrested, offenders think that they are due a streak of good luck before the next arrest. Greg Pogarsky & Alex R. Piquero, *Can Punishment Encourage Offending? Investigating the 'Resetting' Effect*, 40 J. RES. CRIME & DELINQ. 92 (2003); Greg Pogarsky et al., *Modeling Change in Perceptions about Sanction Threats: The Neglected Linkage in Deterrence Theory*, 20 J. QUANTITATIVE CRIMINOLOGY 343 (2004).

<sup>238</sup> Lochner, *supra* note 224, at 456 tbl.6 (presenting results for male offenders).

<sup>239</sup> Shamena Anwar & Thomas A. Loughran, *Testing a Bayesian Learning Theory of Deterrence among Serious Juvenile Offenders* (Apr. 1 2010) (unpublished, on file with author).

<sup>240</sup> *Id.* at 23.

certainty of punishment by only 5%, compared with those who had not been arrested.<sup>241</sup> This increase in perceived risk was greater for less experienced offenders (for whom the information of an arrest would be more novel) than for the more experienced.<sup>242</sup> Unfortunately for both a more general deterrent effect and for the deterrent effectiveness of “zero-tolerance” policing of minor offenses, the effect of an arrest was crime specific. Getting arrested for a violent crime did not affect one’s perceptions of the risk for committing a property offense.<sup>243</sup>

To summarize, contrary to the deterrence doctrine, subjective probabilities of punishment held by individuals do not appear to vary systematically with the actual or objective probabilities. Levitt observed over ten years ago that “there are a number of obstacles to effective deterrence. First, criminals may be poorly informed about the likelihood of detection.”<sup>244</sup> The research to date, though sparse, does suggest that would-be offenders are not well-informed about the actual risks of sanctions. Nor do we know very much about how perceptions are formed. However, consistent with a rational actor assumption, research has shown that individuals’ assessments of the risk of being legally sanctioned are affected by their and others’ experiences with committing crimes with impunity and with getting arrested. Those individuals who commit crimes and get away with them, and who know of others who have had the same experiences, are more likely to lower their estimate of the risk of crime. Individuals who get arrested do update their perceptions of risk, usually by increasing the estimate they have about the risk of another arrest (although whether a gambler’s fallacy exists, and there is a resetting of one’s risk following an arrest, is yet to be determined). What is troubling is that perceptions of sanction threats are generally not well explained at all. We know very little about exactly how perceptions of punishment certainty, severity, and celerity are formed and this is one of the most glaring holes in the deterrence literature. Further, while perceptions of sanction threats do increase in response to an arrest, consistent with the deterrence process, Anwar and Loughran’s research suggests that this effect is very modest.<sup>245</sup> The fact that perceptions of sanction threats are not strongly related to the actual levels of punishment does not speak well of the ability of the criminal justice system to regulate criminal conduct through polices aimed at making punishment more certain, severe, or swift.

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<sup>241</sup> *Id.* at 28.

<sup>242</sup> *Id.* at 30.

<sup>243</sup> *Id.* at 30-32.

<sup>244</sup> Levitt, *supra* note 201, at 353.

<sup>245</sup> Anwar & Loughran, *supra* note 239, at 28.

## VI. THE LINK BETWEEN PERCEIVED SANCTION THREATS AND CRIME

The link between perceptions of the certainty, severity, and celerity of punishment and self-reported involvement in crime has been extremely well researched, with a line of empirical studies that dates back to the early 1970s.<sup>246</sup> The question that this line of research attempts to address is, “Whatever the source of individual perceptions of sanction threats, is there an inverse relationship between perceptions of the certainty, severity, and celerity of punishment and involvement in crime?”<sup>247</sup> The research in this area has gone through a number of methodological developments. In the first stage, respondents were asked about their current perceptions of the certainty and severity of punishment for certain acts and their previous self-reported involvement in those acts. This line of cross-sectional survey data consistently revealed that those who perceived the certainty of punishment to be higher were less likely to report involvement in crime (the results were not as consistent for perceived severity).<sup>248</sup> While these findings were initially taken as evidence of a deterrent effect for perceived sanction threats, it became clear that since the self-reported behaviors were lagged (usually by one year) before the perception measures, the inverse correlation captured not deterrence but an “experiential effect.”<sup>249</sup> This experiential effect reflects the fact that those who committed crimes usually got away with it, and they adjusted their perceptions downward in response to that new information.<sup>250</sup>

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<sup>246</sup> See Waldo & Chiricos, *supra* note 96, at 522-28. There is virtually no research on the role of the swiftness or celerity of punishment on self-reported crime. See Daniel S. Nagin & Greg Pogarsky, *Integrating Celerity, Impulsivity, and Extralegal Sanction Threats into a Model of General Deterrence: Theory and Evidence*, 39 *CRIMINOLOGY* 865 (2001) (providing a recent exception). This is another one of the gaping holes in deterrence research. This may be due to the fact that it is not entirely clear which direction the deterrence hypothesis would predict. Early deterrence theorists like Beccaria clearly argued that punishment must be swift in order to be effective

because when the length of time that passes between punishment and the misdeed is less, so much the stronger and more lasting in the human mind is the association of these two ideas, crime and punishment; they then come insensibly to be considered, one as the cause, the other as the necessary inevitable effect.

BECCARIA, *supra* note 2, at 56 (emphasis omitted). Empirical work by Loewenstein however, questions this. George Loewenstein, *Anticipation and the Valuation of Delayed Consumption*, 97 *ECON. J.* 666 (1987). Findings from some of his experiments suggest that, given the choice, people would like to get their punishment over as quickly as possible and that punishment delayed is seen as more costly than if given immediately. *Id.* at 667-69.

<sup>247</sup> See Waldo & Chiricos, *supra* note 96, at 525-27.

<sup>248</sup> For a review, see Paternoster, *supra* note 77.

<sup>249</sup> Saltzman et. al., *supra* note 233, at 180-84

<sup>250</sup> *Id.*

The second stage adopted a similar survey methodology but utilized panel data so that perceived sanction threats were measured before the incidence of offending—now perceptions were generally lagged by one year. These studies too showed inverse relationships between perceptions of certainty and crime (but not generally severity), but they were much reduced in magnitude from those found in cross-sectional research.<sup>251</sup> Moreover, multivariate models consistently indicated that informal sanctions were more responsible for inhibiting criminal conduct than the fear of formal sanctions. Nevertheless, panel survey data did provide some support for the deterrence doctrine at least with respect to the perceived certainty of punishment.<sup>252</sup>

Three recent examples of the use of survey data to study deterrent effects on behavior by Ross Matsueda et al., Lochner, and Loughran et al. are especially informative. Matsueda and colleagues examined the relationship between the perceived certainty of arrest and subsequent delinquency using panel data from the Denver Youth Study.<sup>253</sup> Consistent with deterrence theory, they found that net of other known explanatory factors, those youth who believed they would be arrested for committing crime were less likely to report doing it in the subsequent year.<sup>254</sup> This deterrent effect held for both self-reported violent crimes and theft.<sup>255</sup> Consistent with a more general model, they also found that the perceived benefits of criminal offending comprised an important factor, and the estimated effect for the perceived costs and benefits of offending were of roughly the same magnitude.<sup>256</sup> Although they found evidence of deterrent effects, Matsueda and colleagues were careful in noting that the deterrence factors *were not* the most important determinants of crime and that the modest effects on crime reduction would suggest caution in using the criminal justice system as the primary tool for compliance:

[G]iven that the United States has one of the highest arrest and imprisonment rates among Western nations, increasing the perceived probability of arrest by 0.1 would likely involve draconian steps by the criminal justice system. This implies that policies for increasing the objective probability of punishment, *by themselves*, may be of limited value for reducing the crime rate substantially . . . . Indeed, the modest explained variance in your models of theft (seven percent) and violence (nine percent)

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<sup>251</sup> For reviews, see Nagin, *supra* note 234, at 12-16; Paternoster, *supra* note 248, at 185 tbl.3; Travis Pratt et al., *The Empirical Status of Deterrence Theory: A Meta-Analysis*, in *TAKING STOCK: THE STATUS OF CRIMINOLOGICAL THEORY* 367, 383 (Francis T. Cullen et al. eds., 2006).

<sup>252</sup> See Paternoster, *supra* note 77, at 191-94.

<sup>253</sup> Matsueda et al., *supra* note 232, at 103.

<sup>254</sup> *Id.* at 114-15 tbl.3.

<sup>255</sup> *Id.*

<sup>256</sup> *Id.*

suggests that other processes, such as socialization and embeddedness in institutions, may dwarf the effects of punishment and suggest more efficient policy interventions.<sup>257</sup>

Lochner examined deterrent effects in two different data sets, the National Longitudinal Survey of Youth (NLSY97) and the National Youth Survey (NYS), both nationally representative panel data sets.<sup>258</sup> Using an estimate of the perceived probability of arrest for auto theft in the NLSY97, Lochner found that it was inversely and significantly related to self-reported subsequent involvement in auto theft and theft of something worth more than \$50.<sup>259</sup> The effect was not large; a 10% increase in the perceived probability of arrest was estimated to reduce auto theft by 7% and serious theft by only 4%.<sup>260</sup> Matsueda cautions that it might take draconian criminal justice policies to increase the perceived probability of punishment appreciably. This and the fact that Lochner found that the arrest rate in the area was unrelated to the individual's perceptions of the probability of arrest further limit the public policy implications of these findings. In addition, recall that in Lochner's research one measure of the objective certainty of punishment, the county-level arrest rate, had no deterrent effect on self-reported auto theft or serious property theft.<sup>261</sup> In the analysis of NYS data, Lochner estimated the relationship between crime-specific perceptions about the probability of arrest for two types of theft, breaking and entering, and attacking someone, on one hand, and self-reported subsequent involvement in those acts, on the other.<sup>262</sup> All coefficients were negative, as predicted by deterrence theory, and Lochner estimated that an increase of ten percentage points in the perceived probability of punishment reduced involvement in serious thefts by about 3% and auto theft by about 8%.<sup>263</sup>

Loughran and colleagues investigated the functional form of the deterrence model using data from a sample of juvenile offenders who were convicted of a serious felony in either juvenile or adult court.<sup>264</sup> Respondents were asked how likely is it that they would be caught and arrested for the following crimes: fighting, robbery with gun, stabbing someone, breaking into a store or home, stealing clothes from a store,

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<sup>257</sup> *Id.* at 117.

<sup>258</sup> Lochner, *supra* note 224, at 444.

<sup>259</sup> *Id.* at 457.

<sup>260</sup> *Id.* at 458.

<sup>261</sup> *Id.* at 454 tbl.5.

<sup>262</sup> *Id.* at 457-58.

<sup>263</sup> *Id.* at 458.

<sup>264</sup> Loughran et al., *supra* note 98.

vandalism, and auto theft.<sup>265</sup> They were also asked to self-report the frequency of their involvement in seventeen different delinquent/criminal offenses that reflected the offenses in the perceptions questions.<sup>266</sup> Summary scales were created both for the perceived risk of arrest and for self-reported offending. They found evidence of a non-linear, inverse relationship between the risk of arrest and offending.<sup>267</sup> Perceptions about the risk of arrest had no effect on self-reported offending when the estimated risk was below some tipping point (an estimated probability of arrest of 0.30).<sup>268</sup> In addition, there was a point of diminishing deterrence returns at the upper end of the perceived risk of arrest distribution. When the perceived probability of arrest was within the range from 0.30 to 0.70, a 10% increase of perceived risk was associated with a statistically significant decrease of more than one half of an offense on average.<sup>269</sup> However, when the perceived probability of arrest was over 0.70, a 10% increase of perceived risk was associated with a much smaller decrease of only about 0.159 of an offense on average.<sup>270</sup> Taken together, these results suggest that the marginal deterrent effect of a change in certainty is substantially greater—that is, nearly 3.5 times larger—for individuals in the mid-range of the continuum, as compared to those in the upper ranges.<sup>271</sup> Two important implications of this are that the observed deterrent effects are very modest in magnitude, and while sanction threat certainty must be above a certain threshold to be credible, beyond a certain point it returns a much diminished deterrent benefit.

In the third stage of perceptual deterrence research, researchers recognized that perceptions of sanction threats should optimally be measured at the time that would-be offenders are contemplating committing a crime.<sup>272</sup> This recognition led to the development of so-called scenario studies. In this type of research, respondents are provided with a description of the commission of a crime that is as realistic as possible. For example, the respondent may be asked to imagine himself in a bar and to believe that he has had enough alcohol to put himself above the legal limit. He is told that he could either drive home himself (and thus drive while

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<sup>265</sup> *Id.* at 13.

<sup>266</sup> *Id.* at 14.

<sup>267</sup> *Id.* at 16-18.

<sup>268</sup> *Id.* at 18.

<sup>269</sup> *Id.* at 20.

<sup>270</sup> *Id.* at 21.

<sup>271</sup> *Id.*

<sup>272</sup> In addition, if perceptions are not stable over time, then the longer the lag between the measurement of perceptions and behavior the greater the possibility of measurement error which would bias any observed relationship to zero.

drunk) or get a ride with someone but then be forced to get back to the bar the next morning the get their car. The respondent typically would then be asked to estimate the risk of being caught for drunk driving if he was to drive himself home, estimate the severity of the punishment he would receive if he was caught, and then estimate the probability that he would drive home in the described situation. The findings from these scenario studies consistently show support for deterrence theory, at least with respect to the perceived certainty of punishment. Those who think they are likely to get caught are less likely to evade paying their taxes, drive while drunk, steal things, cheat in school, act in a sexually aggressive manner, act violently, or engage in various acts of corporate crime.<sup>273</sup>

A study by Nagin and Pogarsky is deserving of special scrutiny because it presents one of the most theoretically sophisticated deterrence models in the literature and it combines the elements of perceived certainty, severity, and celerity.<sup>274</sup> Nagin and Pogarsky argue that crime will be committed when the expected benefits outweigh the expected costs:<sup>275</sup>

$$U(\text{Benefits}) > p U(\text{Legal Costs} + \text{Extralegal Costs}) \quad (2.1)$$

Here, the extralegal costs include such things as social censure and self-inflicted guilt, and  $p$  is the perceived risk of being sanctioned. This is the traditional deterrence model in which crime is expected to be reduced when either the probability of punishment,  $p$ , or the perceived severity of legal punishment (arrest) increases, modified by the inclusion of a parameter that captures the conceptual spirit of the celerity of punishment. For example, it is not clear that netting \$500 immediately from a theft is exactly offset by the probability of a \$500 fine at sometime in the future. Traditional theory holds that only if the cost is expected to arrive quickly after the act—*theoretically as quickly as the benefit*—is there an offset. Delay makes the severity of the punishment diminish because it is not immediate and not as severe. If would-be offenders would prefer to delay their punishment, we should expect to see a celerity effect.<sup>276</sup>

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<sup>273</sup> See Nagin, *supra* note 77, for a review.

<sup>274</sup> Nagin & Pogarsky, *supra* note 246.

<sup>275</sup> *Id.* at 872.

<sup>276</sup> There is no theoretical reason why this has to be true, and Loewenstein has empirically found evidence for the counter position that persons would prefer to get their punishment over quickly rather than have it delayed. Loewenstein, *supra* note 246, at 667-68. The idea that punishment which is to be delivered later is actually perceived to be more painful is consistent with the concept of “dread.” *Id.* at 667. The notion of dread makes things conceptually messy for deterrence theory because while there is an empirical basis for thinking that gains are discounted in the future, we have no knowledge as to whether or not this is symmetric with respect to losses.

In response to this, Nagin and Pogarsky add another parameter to equation 2 above,  $\delta$ , which is a discount factor that assigns a weight to future costs.<sup>277</sup> The model becomes:

$$U(\text{Benefits}) > \delta_t p U(\text{Legal Costs} + \text{Extralegal Costs}) \quad (2.2)$$

Here, the expected legal and extralegal costs of offending are scaled by  $\delta_t$  and by  $r$ , where  $\delta_t = 1/(1 + r)^t$ . The extent to which costs are scaled depends upon how many time periods the legal and extralegal sanctions are delayed, which is the celerity of punishment, and  $r$ , which is the individual's discount rate. The discount rate is the extent to which the person reduces the value of future objects; those with a high discount rate are more impulsive and less patient (Cook has argued that individual discount rates may make deterrence through the legal system problematic).<sup>278</sup> Notice what happens to the costs of crime when the discount rate increases from 0.10 to 0.20 (and the delay is equal to one time period). When  $r=0.10$ , the discount factor is equal to 0.91. As Nagin and Pogarsky illustrate, when the present value of a fine is \$1,000, the value delayed by one time period falls to \$909 with a discount factor of 0.91.<sup>279</sup> When the discount rate is increased from 0.10 to 0.20, the discount factor becomes 0.83 and the value of a \$1,000 fine for a more impulsive individual is \$833. They also show how the discount factor provides an operational understanding of the celerity of punishment. At a fixed level of impulsivity ( $r$ ), the longer the expected delay in punishment (or, as  $t$  increases) the discount factor also increases. So if  $r=0.10$  and the delay in punishment is over two periods, then the discount factor is 0.83 and the present value of a \$1,000 fine is \$833.

According to this deterrence model, the utility of crime decreases as legal and extralegal costs increase. The utility of crime also decreases as the probability of punishment, captured by  $p$ , increases. The magnitude by which punishment produces a disutility is also a function of the value of the discount factor  $\delta_t$  for each individual—as it decreases the person places less weight on the cost of future punishment. As can be seen, the value of  $\delta_t$  declines as  $t$ , the time between the act (or celerity), increases.

Although Nagin and Pogarsky did not directly confront this issue, notice that if George Loewenstein is correct, persons do not view delayed punishment more favorably but want to get their punishment over as quickly as possible.<sup>280</sup> If true, then celerity would have an inverse weight, such that delayed punishment is perceived to be more costly than more immediate punishment. Whether or not celerity is a positive or negative

<sup>277</sup> Nagin & Pogarsky, *supra* note 246, at 872.

<sup>278</sup> Cook, *supra* note 204, at 232-33.

<sup>279</sup> Nagin & Pogarsky, *supra* note 246, at 872.

<sup>280</sup> Loewenstein, *supra* note 246, at 667-68.

weight is one of the interesting issues deterrence researchers need to address in the future.

Nagin and Pogarsky collected data using a hypothetical drunk driving scenario and a sample of college students to test their deterrence model.<sup>281</sup> They found that the perceived certainty and severity of legal punishment had a significant effect on expressed intentions to drive while drunk, but the perceived celerity of punishment did not. As in virtually every deterrence study to date, the perceived certainty of punishment was more important than the perceived severity. The perceived extralegal costs of punishment (the cost of hiring a lawyer) was at least as good at explaining intentions to drive drunk as the anticipated fines. The effect of the perceived severity was far less for those who were more present-oriented than those who were more future-oriented. Nagin and Pogarsky's work is important, not only for putting celerity back on the table for deterrence scholars to debate and examine, but for getting deterrence theorists to think about the role of stable individual characteristics, such as one's discount rate or time orientation, in the deterrence process.

As well as being one of the most interesting and informative perceptual deterrence studies, Nagin and Pogarsky's findings summarize this entire body of perceptual deterrence literature.<sup>282</sup> As seen across a diverse variety of offenses and with different methodologies (panel survey and scenarios), the evidence seems to suggest that there is a modest deterrent effect for the perceived certainty of legal punishment on behavior, no consistent effect for the perceived severity or celerity of punishment (though the latter needs additional research), an even stronger effect for the certainty of non-legal or informal sanctions, and finally, a modest to strong effect for the perceived benefits or gains from offending. The conclusion that Nagin came to in his earlier review of the deterrence literature seems equally accurate today: "[A] consensus has emerged among perceptual deterrence researchers that the negative association between sanction risk perceptions and offending behavior or intentions [to offend] is measuring deterrence."<sup>283</sup> The dispute may occur over how large the effect is. Other reviewers of the perceptual deterrence and rational choice literature, for example, have noted that the magnitude of these observed deterrent effects have not been particularly large relative to other explanatory factors. Travis Pratt and colleagues conducted a meta-analysis of the perceptual deterrence literature and concluded that "the mean effect sizes of the relationships between crime/deviance and variables specified by deterrence theory are

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<sup>281</sup> Nagin & Pogarsky, *supra* note 246, at 874-75.

<sup>282</sup> *Id.* at 872-84.

<sup>283</sup> Nagin, *supra* note 77, at 15.

modest to negligible.”<sup>284</sup> The safest conclusion from the literature thus far would be that the perception of certain legal and extralegal sanctions does seem to act as a modest deterrent factor, but that the perceived severity and celerity of punishment do not appear to be effective deterrents to crime, and we know virtually nothing about celerity. The remaining question to be addressed in the conclusion is why we do not find more dramatic and impressive deterrent effects. Is it because people are not rational as deterrence theory requires, or is it that the criminal justice system is not set up to best exploit that rationality?

## VII. CONCLUSION

The remark offered at the beginning of this Article still seems relevant at the end—the literature seems to suggest that there is a marginal deterrent effect to some changes in criminal justice policy. It is reasonable to believe that increasing the number of police officers on the street does deter some amount of crime, and increasing the risk of incarceration does as well. The literature on the specific deterrent effect of imprisonment (whether those who are punished do not return to crime when released) was not reviewed here, but it has been reviewed elsewhere very recently, and the evidence does not suggest that either imprisonment itself or the length of imprisonment is effective in deterring crime for those who experience it.<sup>285</sup> There is very little evidence to support the notion that there is a robust relationship between the objective and perceived properties of punishment, though offenders do rationally update their risk estimates in response to their own and others’ experiences. Finally, while there may be disagreement about the magnitude, there does seem to be a modest inverse relationship between the perceived certainty of punishment and crime, but no real evidence of a deterrent effect for severity, and no real knowledge base about the celerity of punishment.<sup>286</sup>

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<sup>284</sup> Pratt et al., *supra* note 251, at 383.

<sup>285</sup> See Anthony N. Doob & Cheryl Marie Webster, *Sentence Severity and Crime: Accepting the Null Hypothesis*, in 30 CRIME AND JUSTICE: A REVIEW OF RESEARCH 143 (Michael Tonry ed., 2003); Daniel S. Nagin et al., *Imprisonment and Reoffending*, in 38 CRIME AND JUSTICE: A REVIEW OF RESEARCH 115 (Michael Tonry ed., 2009).

<sup>286</sup> In addition to the work on the specific deterrent effect of imprisonment, space prevented the review of other literatures that speak to the possibility of a deterrent effect. For example, one important but unaddressed issue is whether or not there is a marginal deterrent effect as one transitions from the juvenile justice system to the adult system. There is evidence in favor of deterrence from studies that show a sharp drop in crime when youth reach the age of adulthood and move from the very much more lenient juvenile justice system to the more punitive adult justice system. Steven D. Levitt, *Juvenile Crime and Punishment*, 106 J. POL. ECON. 1156 (1998). However, while Hjalmarsson found that the perceived risk of arrest and punishment increases at the age of majority, there was no consistent relationship between this increased perception of risk and self-reported

A puzzling question is why deterrent effects reported in the literature are not stronger. Does it mean that people are not rational and do not behave rationally? Or does it mean that the criminal justice system might not be the best place to see deterrent effects given how it the system works? In other words, perhaps offenders are rational, or at least rational enough to be effectively deterred by sanction threats, but the criminal justice system is not capable of exploiting that rationality.<sup>287</sup>

The evidence to date with respect to deterrence does speak clearly about the role of rational choice in criminal offending. It says that while offenders and would-be offenders may not be perfect Bayesians or perfectly rational, they certainly are rational in the sense that they respond to incentives and disincentives. For example, research at the individual-level shows that people are affected by their perceptions about the risk of getting caught for misconduct and that these perceptions are sensitive to the outcomes of behavior. Perceptions of the risks of crime are pushed downward when people commit crimes and get away with them and are pushed upward when they get arrested. Policy studies about the policing of “hot spots” and police “crackdowns” do generally show that there is at least an initial general deterrent effect in response to the enhanced presence of the police and police actions, and that offenders rationally readjust their perceptions of the risk of sanctions and reduce their offending. Or rationally noticing that enforcement in one area has increased, they “move around the corner” and commit crimes elsewhere until the “heat is off.” Evidence of crime displacement, then, while troublesome for policy evaluations is perfectly consistent, and even expected, under the assumptions of deterrence and rational choice theory.

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involvement in criminal behavior. Randi Hjalmarsson, *Crime and Expected Punishment: Changes in Perception at the Age of Criminal Majority*, 11 AM. L. & ECON. REV. 209, 240-44 (2009). There is also evidence counter to deterrence theory which fails to show that permissible concealed gun laws have a negative impact on crime. Jens Ludwig, *Gun Self-Defense and Deterrence*, in 27 CRIME AND JUSTICE: A REVIEW OF RESEARCH 363 (Michael Tonry ed., 2000). Finally, there is an abundant literature on whether or not the death penalty is an effective deterrent to homicide with strong statements by some that it is a very effective deterrent, while others offer compelling grounds to think that it really has no effect. See generally Ethan Cohen-Cole et al., *Model Uncertainty and the Deterrent Effect of Capital Punishment*, 11 AM. L. & ECON. REV. 335 (2009); John J. Donahue & Justin Wolfers, *Estimating the Impact of the Death Penalty on Murder*, 11 AM. L. & ECON. REV. 249 (2009); John J. Donahue & Justin Wolfers, *Uses and Abuses of Empirical Evidence in the Death Penalty Debate*, 58 STAN. L. REV. 791 (2005); Cass R. Sunstein & Adrian Vermeule, *Is Capital Punishment Morally Required? Acts, Omissions, and Life-Life Tradeoffs*, 58 STAN. L. REV. 703 (2005).

<sup>287</sup> Special thanks to Shawn Bushway for hammering this point into my head as only he can.

Even the finding that prison sentences or longer prison sentences do not deter—and may actually slightly increase the risk of recidivism—is consistent with a rational choice view of offending.<sup>288</sup> While prison, and more rather than less prison, may send a deterrent message to would-be offenders that punishment is credible and severe, it may, in the longer-term, make it much more difficult for those who have been imprisoned to desist when they leave the penitentiary. There is an abundant literature that vividly describes the many and onerous obstacles to employment, housing, and full civic participation that ex-offenders face upon release from prison.<sup>289</sup> These obstacles have the effect of decreasing the utility of non-offending. Confronted by the fact that employment is substantially impaired because of their criminal record, public housing is restricted, and other penalties to citizenship exist, crime subsequent to imprisonment may be the more rational alternative for some past offenders. Much of the deterrence literature, then, is perfectly consistent with a rational choice understanding of criminal behavior. But if offenders and would-be offenders are indeed rational, why are deterrent effects for legal sanctions so meager in the literature?

The answer to this question must remain speculative at the moment but it was hinted at very early on in the intellectual history of deterrence theory and the intellectual history of the *Journal of Criminal Law and Criminology*.<sup>290</sup> Both Bentham and Beccaria argued that in order to be effective in offsetting the perceived benefits of crime, punishment must come soon after the offense. Beccaria said it most directly: “The more promptly and the more closely punishment follows upon the commission of a crime, the more just and useful it will be.”<sup>291</sup> The reason prompt punishment is more “useful” is because it is important “that the crime and the punishment be intimately linked to together, if it be desirable that, in crude vulgar minds, the seductive picture of a particularly advantageous crime *should immediately call up the associated idea of punishment.*”<sup>292</sup>

Although both Beccaria and Bentham have been accused of having had a primitive idea of human learning, they actually had a quite sophisticated

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<sup>288</sup> Cf. Doob & Webster, *supra* note 285.

<sup>289</sup> See generally DEVAH PAGER, MARKED: RACE, CRIME, AND FINDING WORK IN AN ERA OF MASS INCARCERATION (2007); Shawn D. Bushway, *The Impact of Arrest on the Job Stability of Young White American Men*, 35 J. RES. CRIME & DELINQ. 454 (1998); Shawn D. Bushway, *Labor Market Effect of Permitting Employers Access to Criminal History Records*, 20 J. CONTEMP. CRIM. JUST. 276 (2004); Christopher Uggen et al., *Citizenship and Reintegration: The Socioeconomic, Familial, and Civic Lives of Criminal Offenders*, 605 ANNALS AM. ACAD. POL. & SOC. SCI. 281 (2006).

<sup>290</sup> See, e.g., von Hentig, *supra* note 43.

<sup>291</sup> BECCARIA, *supra* note 2, at 55.

<sup>292</sup> *Id.* at 57.

understanding of the limits of criminal deterrence. Beccaria clearly argued that for a deterrence system to be most effective, the crime should immediately trigger in the would-be offender's mind the anticipated punishment. The benefit of the crime, the "seductive picture" of it, is immediate and must in turn be countered in the person's mind by the comparably immediate anticipation of punishment. Beccaria was fully aware of the pull of immediate pleasure and that most of us are more attracted by the immediate benefits of action than we are by the long-term costs: "[T]he more vulgar [people] are, the more apt they are to act merely on immediate and familiar associations, ignoring the more remote and complex ones."<sup>293</sup> For deterrence to work well, the would-be offender, tempted by the immediate gains of committing the crime, must be able to quickly conjure up in her mind the anticipated pain of punishment. To assist them in that conjuring up of the punishment in their mind, the criminal justice system must make punishment swift. However, in the criminal justice system, not only are punishments uncertain, they are far in the future compared with the benefits of offending. The criminal justice system, because it has other imperatives (justice must be served and justice frequently takes time), is not culturally positioned to exploit the rationality of offenders.

Criminal deterrence may have its limits precisely because the legal costs are far removed in time and people find it difficult to feel the pain of the longer-term consequences of their actions. The critic of deterrence von Hentig referred to the pains of the criminal law as a "long-distance danger" and noted that "the criminal seems to be in part a human specimen, whose appetites and desires are irresistibly attracted by a near object."<sup>294</sup> The problem of being seduced by "near objects" is perhaps more general than von Hentig thought. Think for a moment of the predicament of the dieter tempted by a delicious slice of chocolate cake. The pleasures are powerful and immediate, and the pain of added pounds is down the road, removed in time. The cake would be eaten unless this dieter can imagine in their mind an immediate cost—say the feeling of defeat at breaking her diet or shame at succumbing to the seduction. In order to offset the immediate pleasure of eating the chocolate cake, the tempted dieter would have to be able to perceive an immediate pain of breaking the diet. In a series of absolutely fascinating research papers, a group of behavioral economists and psychologists referred to this immediate discomfort or pain as the "pain of paying."<sup>295</sup> They specifically ask why people purchase things they clearly

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<sup>293</sup> *Id.* at 56.

<sup>294</sup> Von Hentig, *supra* note 43, at 559 (emphasis omitted).

<sup>295</sup> Brian Kuntson et al., *Neural Predictors of Purchases*, 53 NEURON 147, 147 (2007); Scott Rick et al., *Tightwads and Spendthrifts*, 34 J. CONSUMER RES. 767, 768 (2007).

cannot afford, sometimes becoming spendthrifts; the answer, they argue, is that many of us find it difficult to feel the “pain of paying,” we defer payment with credit cards or don’t *really* pay for it by using debit cards.<sup>296</sup> Unable to feel the immediate pain of paying, we buy what we don’t need to buy, we eat and drink what we shouldn’t eat and drink, and we gamble when we should save. The “limit[] of deterrence” is that formal legal sanctions may be too far removed in time to provide that immediate pain of paying.<sup>297</sup> This was precisely the point made by Jeffery in his *Journal* article when he noted that a most unfortunate feature about legal punishment and criminal behavior, and the reason why criminal sanctions cannot be relied upon to generate conformity, is that “[t]here are no aversive stimuli in the environment *at that moment*.”<sup>298</sup>

Without suggesting at all that legal sanctions should be abandoned because Andenaes was absolutely correct when he asserted that legal sanctions serve to reinforce our notion of morality, and because there is evidence of modest marginal deterrent effects of the law, we might take Beccaria’s advice in the next to the last chapter of *On Crimes* to heart and consider that our best effort at securing compliance with rules may come much earlier in life through education and prevention.<sup>299</sup> Maybe Beccaria had it right and the answer to America’s crime problem is to be found in the *Emile* and not the *Panopticon*.

Finally, it is also very likely that the distal punishment of the criminal justice system not only fails to constructively exploit rationality, it does, to its detriment, effectively exploit a common feature of decision making under uncertainty—time discounting. As Cook brought up three decades ago, people have a tendency to “discount” future events.<sup>300</sup> This discounting would account for the fact that even those who have experienced punishment, on average, rate a ten-year prison sentence as much less than twice as severe as a five-year sentence.<sup>301</sup> When we think we are greatly enhancing deterrent effects by doubling the length of sentences, then, we likely have a far lessened impact on the offending calculus of offenders. Time discounting applies to the entire panoply of sanctions available in the arsenal of the legal system, punishments occur in the future, and their certainty and severity may be greatly discounted in making a decision as to whether to commit a crime or not. Whatever sanctions the criminal justice system may have available for offenders or

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<sup>296</sup> Knutson et al., *supra* note 295, at 151-52; Rick et al., *supra* note 295, at 767-69.

<sup>297</sup> Von Hentig, *supra* note 43, at 559.

<sup>298</sup> Jeffery, *supra* note 71, at 299 (emphasis added).

<sup>299</sup> BECCARIA, *supra* note 2, at 93-98.

<sup>300</sup> Cook, *supra* note 204, at 232-33.

<sup>301</sup> McClelland & Alpert, *supra* note 208, 311 tbl.1.

would-be offenders, their effectiveness in deterring crime is naturally diminished by their lack of temporal proximity to the offending decision. This lends further humility in expecting that the law and legal institutions can play the most important role in securing compliance to important social norms.

