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Deterring Serious and Chronic Offenders

*Research Findings and Policy Thoughts
from the Pathways to Desistance Study*

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Introduction

Deterrence, as traditionally hypothesized, is based upon the logic that criminal sanctions that are certain, severe, and swift will work to increase perceived sanction risk and cost, and in turn reduce criminal activity (Beccaria 1764; Zimring and Hawkins 1973; Andenaes 1974). Offenders' perceptions of certainty and severity are closely linked to economic and criminological theories of rational choice. A rational would-be offender will engage in crimes that are attractive because the expected rewards will exceed the expected costs (Becker 1968; Cornish and Clarke 1986). The expected costs of crime can be operationalized as an individual's perception of the severity of any sanctions, weighted by the perceived risk of detection. Thus, if this expected cost of crime can be made large enough to exceed any potential rewards, increasing an individual's perception of either costs or risks (or both) will cause him or her to see a decision to engage in crime as no longer rational. Simply put, the individual will be deterred from committing the crime.

There is a substantial body of empirical research testing theoretical and perceptual deterrence theory, dealing mainly with samples of adults, non-offenders, or primarily nonserious offenders (Grasmick and Bursik 1990; Nagin 1998; Nagin and Paternoster 1993; Nagin and Pogarsky 2001, 2003; Piquero and Tibbetts 1996). This literature demonstrates an important, albeit often weak, relation between sanction-threat perceptions and criminal activity: what people think about the likelihood of getting caught and the likely sanction is related to level of criminal activity. However, an important limi-

tation on this literature is that there is a lack of research attention to active and serious offenders, the precise group for whom studies of deterrence are ultimately most relevant (Apospori and Paternoster 1992; Decker et al. 1993; Piquero and Rengert 1999). The dearth of findings among serious offending adolescents presents a particularly important limitation, given the high level of involvement of this group in crime and the developmental deficits that may affect their cognition and decision-making ability with respect to crime (Steinberg and Scott 2003). Accordingly, a critical meta-policy question is whether or not more seriously or chronically offending adolescents consider and respond to sanction threats in their decision making and, by extension, whether they can actually be deterred at all (cf. Fagan and Piquero 2007).

This chapter reviews recent evidence from the Pathways to Desistance Study about deterrence (hereafter called “the Pathways study”). This study is a multisite, longitudinal sample of over thirteen hundred adolescent felony offenders that includes regular interviews with these adolescents as they moved from adolescence into early adulthood. The Pathways study addresses the issue of perceptions of deterrence directly and illuminates the mechanisms of deterrence for serious offenders. In this chapter, we provide a brief overview of current evidence on the role of deterrence and perceptions developed to date from the Pathways study. We consider possible policy implications and outline avenues for future research and policy development.

The chapter unfolds in five sections. First, we provide a brief summary of the Pathways to Desistance Study. Second, we review empirical evidence that demonstrates the rationality of high-risk adolescents (many of whom are now young adults) regarding involvement in crime. We show that offenders do consider rational-choice perceptions in their offending decisions, and can even be subclassified according to observed heterogeneity in their perceptions of risk and costs. Third, we discuss the elasticity and malleability of these perceptions, and whether adolescent offenders act differently when they change risk and cost perceptions. Fourth, we discuss extensions of findings to policy efforts aimed at maximizing deterrence among this group of offenders. Finally, we conclude with a discussion of future directions for theory and research.

The Pathways to Desistance Study

The Pathways to Desistance Study is an ongoing, multisite, longitudinal investigation of the transition from adolescence to young adulthood in serious adolescent offenders. Participants are adolescents who were adjudicated delinquent in juvenile court or found guilty in criminal court of a

serious offense (almost entirely felony offenses) in either Maricopa County, Arizona, or Philadelphia, Pennsylvania. These youth were ages fourteen to seventeen at the start of the study. A total of 1,354 adolescents were enrolled, representing approximately one in three adolescents adjudicated on the enumerated charges in each locale during the recruitment period (November 2000 through January 2003). The study sample is mostly non-white (44.6 percent African American, 30.2 percent Hispanic) and male (86.4 percent).

Interviews were initially conducted with the adolescents at seven consecutive six-month periods, followed by yearly interviews thereafter. Information on the rationale and overall design of the study can be found in Mulvey et al. (2004), while details of the procedures for recruitment, a description of the full sample, and other aspects of the study methods are discussed in Schubert et al. (2004). In addition to findings on deterrence, the study has also produced research on other legal issues, including institutional placement and service provision (Loughran et al. 2009; Mulvey et al. 2007), community reentry (Chung et al. 2007; Steinberg et al. 2004), transfer to adult court (Schubert et al., 2010; Loughran et al., 2010), and legal socialization (Piquero et al. 2005; Fagan and Piquero 2007), as well as other, extralegal areas, such as patterns of offending (Mulvey et al. 2010), the effects of treatment for drug use/abuse (Chassin et al. 2010; Losoya et al. 2008), and acculturation and illegal activities (Knight et al. 2009). A full list of study measures and publications can be found at <http://www.pathwaysstudy.pitt.edu/>.

The Pathways measures of illegal behavior are based on both individual self-reported offenses and official arrest records that are measured longitudinally. The Pathways data also include rich longitudinal self-reported measures of individual perceptions of the risks, costs, and rewards of crime. Prior empirical evidence on deterrence suggests that offending involves both personal and social rewards and that punishment associated with offending may have distinct social and personal costs, may emanate from both formal and informal sources of social control, and are perhaps capable of changing within individuals over time (Williams and Hawkins 1986; Nagin 1998). As a result, indices of risks, costs, and rewards used in this study address the adolescent's perceived likelihood of detection and punishment for any of several types of offenses (Nagin and Paternoster 1994). This wealth of observation on both offending and perceptions presents a unique opportunity to study multiple deterrence-related questions in an offender-based sample.

Do Offenders Consider the Costs and Benefits of Crime in the Decision to Offend?

Beyond simply forming perceptions of certainty and severity of sanctions and rewards of crime, individuals will be deterred only if they actively and dynamically *consider and weigh* these perceptions when contemplating crime decisions. A first question is thus whether perceptions of risks and costs to offending even matter to active offenders. Furthermore, if these perceptions are actively considered by serious offenders, is there heterogeneity in these perceptions that may permit an assessment of individual variability in propensity to be deterred? In other words, are there differences within the offender population such that some of these individuals are more/less sensitive to the costs/benefits of criminal offending?

Fagan and Piquero (2007) consider the role of rational-choice perceptions—including risk, reward, and social and personal costs—in explaining individual offending trajectories in the Pathways data. They find evidence that rational-choice perceptual measures are associated with differences in offending trajectories and desistance. Specifically, when punishment risks and costs were salient in individuals, crime rates tended to be lower over time—both risk perceptions and evaluations of experienced punishment compete with perceived and experienced rewards of crime to influence individual offending trajectories. Fagan and Piquero argue that these factors work through the mechanism of legal socialization, that is, the internalization of legal rules and norms that regulate social and antisocial behaviors, to directly influence offending decisions. They also argue, however, that both mental health and developmental maturity moderate the effects of perceived crime risks and costs on criminal offending, indicating that the costs/benefits-to-crime relationship is not entirely general and may be shifted by other individual characteristics.

These results establish a necessary baseline for showing that even the most serious offenders can be deterred under certain conditions—specifically that, at least for some, rational-choice perceptions associated with the costs/benefits of offending do play some role in offender decision-making processes. Yet, it appears that, even within this class of serious and more seasoned offenders, there is variability in amenability to deterrence. Some of this variability might be attributable, as Fagan and Piquero point out, to developmental differences among these adolescents—some individuals may simply be older or more mature, and thus factors like costs and risk mean more to them in real terms. Alternatively, it is possible there may be other sources of variability in this group that are related to more stable individual differences.

Loughran, Piquero, Fagan, and Mulvey (in press) extend the reasoning of Fagan and Piquero (2007) by directly exploring heterogeneity in perceptions of risks, costs, and rewards to crime among the Pathways sample. They show that perceptions may evolve over time differentially among adolescent offenders. Important and *identifiable* differences in the sample based on offending perceptions suggest that amenability to deterrence varies widely among this group. Loughran et al. (in press) conclude that accumulated offending experience provides a simple way to decompose the sample and define very different groups of offenders in terms of their rational-choice perceptions. Specifically, they identified a group of high-rate offenders who display lower perceived risks of detection and punishment for crime and also higher perceived rewards from crime. Alternately, they found a group of low-rate offenders who report higher perceived risk and lower perceived reward regarding offending. Finally, they identified a third group of medium-rate offenders, whose perceptions of risk and reward fell in between those of the first two groups. Furthermore, these differences seem to be stable over time—the average levels of risk and reward perceptions between the three offending types identified did not converge after thirty-six months. The differences were robust to age or maturity effects that otherwise might have influenced group composition.

In arguing the importance of these findings, Loughran et al. advance the notion of *differential deterrence*, a term they intend to refer to the significant amount of heterogeneity that exists across serious juvenile offenders with respect to their decision-making calculus, perceptions of rational-choice components, and involvement in criminal activity. Loughran et al. demonstrate heterogeneity in the mechanisms of deterrence among serious adolescent offenders and conclude that some active offenders may be more deterrable than others, in that different groups of offenders may react and adjust their sanction-threat perceptions in significantly different ways. This underscores the notion that some serious offenders may be sensitive to changes in criminal justice efforts aimed at making crime less beneficial and more costly, while the signals of increased risk and cost may be missed by others.

This set of results opens the door to several other questions regarding deterrability: are these perceptions dynamic and thus changing over time in response to offending and its consequences, or are these perceptions static and thus largely insensitive to change and updating within individuals? Does the makeup of cost/benefit perceptions matter to some offenders more than others, and does this vary by individual characteristics and/or over time? Can influencing or changing perceptions actually affect offending behavior

for such a serious group of offending adolescents, or do they ultimately not matter in the decision to offend? These results led us to the next set of studies, which ask the following question: if perceptions of risk change over time, how are these changes operationalized into decisions to commit or avoid crime, and how do these patterns vary among this group over time?

How Are Changes in Risk Operationalized among Offenders?

According to the original rational-choice model outlined by Becker (1968), if prospective criminals do weigh sanction and reward perceptions, they can be deterred by (a) increasing the costs to committing crimes, (b) decreasing the benefits to committing crimes, or (c) increasing the probability of detection, i.e., risk. The last of these mechanisms relies primarily on using arrest or the threat of arrest to deter individuals from committing crimes. However, arresting an individual will only deter him or her if two things ultimately happen. The risk perception of detection must *increase* in response to an arrest, and this increase in risk perception must lead to a *reduction* in the probability of reoffending. Both of these linkages must be active in order for deterrence to operate as hypothesized (Pogarsky et al. 2004). By examining both linkages among juveniles in the deep end of the system, we can essentially ask if these types of juveniles are in fact “deterable” by this mechanism.

Anwar and Loughran (2011) explore the first of these two linkages in the Pathways data: do adolescent felony offenders update their subjective beliefs about certainty risk perceptions as they accumulate additional information about both offending and arrests, including undetected offenses? Their model to test this hypothesis is based on the concept of Bayesian learning theory, which predicts that previously held subjective beliefs will be adjusted, or updated, in response to newly observed information, known as empirical signals (in this case the ratio of number of arrests to self-reported crimes).

First, it is possible that an individual could lower his or her threat perception, rather than raise it, as the result of an arrest. Pogarsky and Piquero (2003) advanced the term “reset” to indicate the within-individual response of a lowered threat perception in response to being punished for an illegal act. Resetting is the process by which individuals revert their sanction-threat perceptions back to some level in response to the sanction as opposed to increasing their sanction-threat perception—as deterrence theory would anticipate. An individual who experiences punishment may reset his or her view of the punishment as a chance event that is unlikely to happen again—especially so soon after the offense that led to the punishment experience.

For individuals who are resetting, then, not only would an arrest not have a deterrent effect, but to the contrary it would encourage offending.

The analyses conducted by Anwar and Loughran (2011) demonstrated that, as is the case with nonoffenders (Pogarsky et al. 2004; Lochner 2007; Matsueda et al. 2006), individuals in the Pathways sample *do* tend to upwardly adjust their risk perceptions, by about 5 percent per arrest on average. This is a necessary condition for deterrence. However, when offending is undetected or avoids a legal reaction, individuals actually lower their perceptions of risk. This evidence suggests both symmetry in offenders' updating processes and a general fluidity in sanction-threat perceptions.

Anwar and Loughran show two other interesting, and policy-relevant, extensions to this basic updating process. The first is an "experience effect." Specifically, as predicted by Bayesian learning theory, individuals who are far along in their criminal careers might become quite certain about what their true arrest rate is and will therefore no longer update their risk perceptions based on their new experiences. These individuals may be "maxed-out" on information, and consequently, arresting them has no effect on their subsequent risk perceptions because they are quite certain in their perception already. This implies there is no longer a deterrent effect to arrests, at least in the sense of increasing sanction-risk perceptions to crime. In such instances where experience trumps new information, sanction threats may be only able to influence certain subgroups of the offender population (see also Parker and Grasmick 1979; Pogarsky 2002). The balance of this population might then be "undeterrable."

Anwar and Loughran show evidence that confirms such an experience effect. First, the weight placed on the prior belief is significantly greater for more experienced offenders. Also, the effect of an arrest on updated perceptions is significantly weaker for experienced offenders. Both results suggest that for those offenders further along in their criminal careers, arrests have a weaker perceptual deterrent effect, and, by extension, arrests early on in an individual's criminal career, versus those later on, may produce a greater deterrent effect. This highlights an interesting but understudied issue in criminological research: the relationship between accumulated offending experience and sanction-threat perceptions (Horney and Marshall 1992).

The second extension suggested by Anwar and Loughran (2011) concerns the observation that the risk-updating process may be crime specific. In this view, experiencing an arrest for one type of crime appears to affect only perceptions for that certain crime, rather than all crime-risk perceptions, at least at the level of income-generating (e.g., stealing) versus aggressive (e.g.,

assault) crimes. The policy relevance of this possibility seems clear. If risk-perception updating is crime specific, then police crackdowns on one type of crime are unlikely to have a deterrent effect on other crimes, and may even potentially encourage other crimes if police shift limited resources away from detecting certain crimes or by inducing a substitution effect (Nagin 1998). However, if risk perceptions are not crime specific, then cracking down on a specific crime will have a global deterrent effect. At least for the adolescents in the Pathways study, crime-specific updating implies that policies targeting specific types of offending may be more effective at deterring individuals from engaging in them than general polices aimed at overall crime reduction. If a police force has limited resources and it decides to target a specific crime, it will probably have to shift its focus away from other crimes, which may result in a reduction, among offenders, regarding the sanction risks for those other crimes. The results of Anwar and Loughran's analysis imply that individuals may respond to this by substituting out of the crime that police are targeting into other crimes with lower risks.

As mentioned earlier, the fact that individuals update their subjective risk perceptions in response to arrest is a necessary condition for deterrence. Yet observation of this connection between arrest and risk perception may ultimately be insufficient to finish that job if these changes in risk perceptions do not result in changes in offending behavior. Therefore, we ask whether changes in risk perceptions are associated with subsequent changes in behavior among serious offending juveniles, and if so, how do these changes manifest across different levels of risk perceptions?

There is a substantial body of evidence that has repeatedly demonstrated a small but significant "certainty effect," that is, a negative association between perceived certainty of detection and crime (Paternoster 1987; Nagin 1998). Again, however, much of these findings are derived from samples of nonoffenders, and the effects tend not to be large (Pratt and Cullen 2005). Therefore, it is uncertain whether there is a deterrent effect from increased risk perceptions among more seasoned adolescent felony offenders. Even if such risk-certainty deterrent effects do exist, it remains unknown whether the effect is constant across the risk spectrum or if there is a "tipping point" threshold above which changes in risk deter but below which they do not.

To examine these possibilities, Loughran, Pogarsky, Piquero, and Paternoster (2010) investigated the presence and salience of a "certainty" effect among the serious offenders in the Pathways study. While these investigators found strong evidence of a negative association between risk and self-reported offending, they also uncovered some important features of the *func-*

tional form of this relationship, i.e., its shape along different points of the risk continuum. The first point made is that there is strong evidence of nonlinearity in the risk-offending relationship. Linearity implies that increases in the perception of risk would be associated with similar decreases in reported offending regardless of the individual's prior risk perception—for instance, a 10 percent increase in risk from 10 percent to 20 percent would have the same magnitude in reduction of offending as a change from, say, 50 percent to 60 percent or 80 percent to 90 percent. Their analyses indicate that this is not the case.

Instead, Loughran et al. (2010a) find that, while increases in risk for those individuals in the midrange of the risk continuum (i.e., 30 percent–90 percent) are associated with a linear decline in the likelihood of offending, the probability of offending for individuals in the lower end of the risk continuum (i.e., < 30 percent) is relatively insensitive to sanction risk. Among this group, Loughran et al. (2010a) find no evidence of any certainty effect at all, i.e., increases in sanction risk were *not* associated with a reduction in offending. There appears to be a “tipping effect,” or detection-probability threshold, that must be reached before any deterrent effect can be realized. Individual offenders deem law enforcement capabilities and sanction-threat perceptions to, in fact, be credible only when they are above that threshold. By extension, those offenders who do not deem such threats credible in the first place are unlikely to be deterred by greater sanction risks. Additionally, the analysis reveals that for very high-risk individuals (i.e., > 90 percent), the rate of decline in offending likelihood increases dramatically with changes in risk. Such “overweighting,” or treating high probabilities as certainty, is again inconsistent with a linear risk-offending relationship, and it suggests that policies aimed at such high perceived-risk individuals are perhaps inefficient or unnecessary. Figure 9.1 summarizes the relationship between levels of perceived risk and potential deterrent effects for these different risk-based classes of offenders.

Lessons for Theory and Policy

These results have interesting implications for both theory and policy, and suggest the potential to reframe traditional models of rational choice. The standard economic model of crime generally assumes that offenders use a linear function to weigh the risk, benefit, and cost of involvement in crime. But substantial theoretical and empirical work in behavioral decision theory has repeatedly shown that individuals not only often deviate from rational

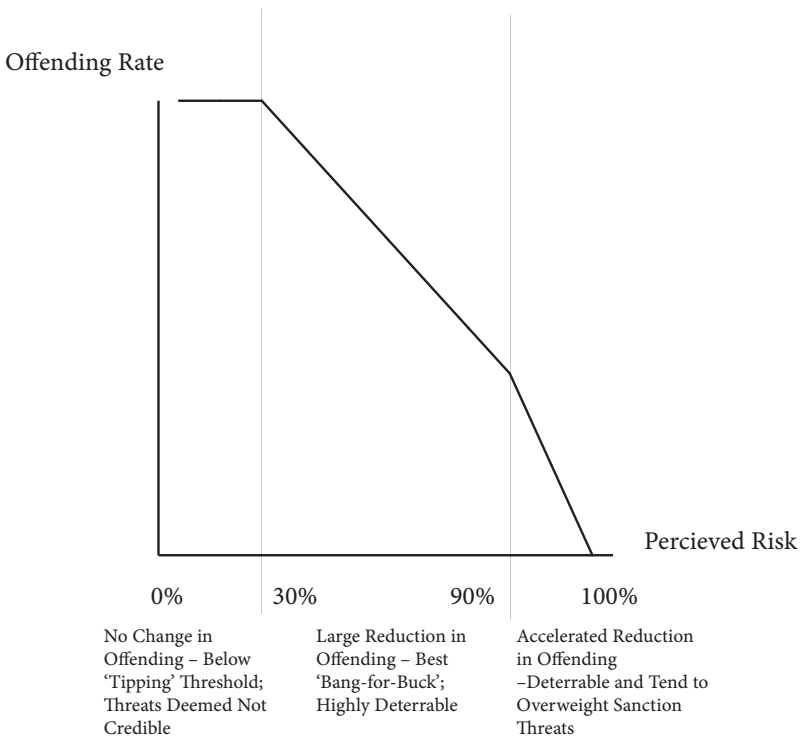


Figure 9.1. Differential Offending Responses to Changes in Risk Perceptions by Risk-Class (as adapted from Loughran, Pogarsky, Piquero and Paternoster, 2010)

behavior but also tend to do so in *predictable* ways. This seems true of the serious offenders in the Pathways group as well.

Given this, other theoretical approaches need to be integrated into work aimed at elucidating the mechanisms of deterrence. Loughran et al. (2010a) propose the use of Prospect Theory (Kahneman and Tversky 1979) as an alternative descriptive theory to traditional rational-choice theory when discussing deterrence. Furthermore, Loughran et al. advocate more rigorous consideration of other components of behavioral decision theory to advance the theoretical and empirical study of deterrence and offender decision making. For example, traditional rational-choice theory assumes, among other things, that individuals have well-defined preferences for benefit-cost components of crime, and *discount*, or devalue, future consequences of crime, by a fixed rate (see Nagin and Pogarsky 2004). However, results from research in behavioral decision theory show that this is not always that case, by

revealing instances in which individuals may have a nonconstant, or hyperbolic, discount rate (O'Donoghue and Rabin 2000), where they tend to act impulsively and greatly (and irrationally) devalue the future when rewards to crime are more immediate, and other individuals may have a negative discount rate (Loewenstein 1987), in which outcomes in the future actually loom larger than those in the present. Those with a negative discount rate for punishment, for instance, would be more deterred by punishment that occurs in the future (since the pain of anticipation would itself act as a deterrent)—a notion that is contrary to the traditional belief that celerity of punishment is a mechanism of deterrence.

There are also important policy considerations for law enforcement and efforts aimed at deterring serious crime among older adolescents such as the Pathways group (Loughran et al. 2010a). First, sanction threats should be credible and well communicated. Absent credibility, the value of such threats will be negligible. Second, while some offenders are deterrable, and some are not deterrable, a large group of serious adolescent offenders will be conditionally deterrable, according to the manner in which sanction risks are expressed and conveyed. Thus, this group should be the focus of targeted enforcement policies that are different from the measures used with other groups, since the leverage for deterrence in this group is greatest. Identification of these offenders—those whose crime decisions can be changed as they still are considering future offending—should be a strategic element of law enforcement strategy. “Absolute deterrence” aimed at all offenders, including those with higher perceived risk, may be inefficient (Loughran et al. 2010a). For example, there may be little to gain by targeting individuals who already perceive a very high probability of detection, as the marginal deterrent effect for these individuals may be quite small and require a large amount of resources from the criminal justice system.

These analyses of the Pathways study data also show that there is considerable uncertainty, or *ambiguity*, in offender risk perceptions. Loughran, Paternoster, Piquero, and Pogarsky (2010b) investigate not only whether *average* risk perceptions deter would-be offenders but also whether the *variability*, or degree of uncertainty, of such perceptions matters as well. This concept is again taken from the literature on behavioral decision theory, where an important distinction is made between *risk*, or probabilities known to decision makers, and *uncertainty*, where such risks are unknown and are formed subjectively. This literature has shown that individuals tend to prefer known gambles over more uncertain ones, even for similarly valued outcomes (Camerer and Weber 1992). The extension to deterrence and criminal

decision making, where detection probabilities are rarely known to potential offenders and are thus subjective, is straightforward.

As theorized by both Sherman (1990) and Nagin (1998), uncertainty in perceptions of detection probabilities may actually enhance the deterrent effect of increases in perceived certainty. According to Sherman (1990), this is the case because, while the overall mean detection level may be low, creating uncertainty about specific detection probabilities with respect to certain areas, crime types, or other factors may generate a larger deterrent risk of getting caught as compared to a constant, low rate of detection. Loughran et al. (2010b) tested this idea in the Pathways data by examining the role of ambiguity in offender risk perceptions and its relation to the certainty effect. Uncertainty for each individual was characterized as the amount of variability in each individual's crime-specific risk perceptions. These results show that for income-generating crimes, the deterrent effect of offender risk perceptions was actually *enhanced* for individuals who reported larger uncertainty in their perceptions near the lower end of the risk continuum. This result is consistent with Sherman's (1990) hypothesis, as well as the concept of "ambiguity aversion" in decision theory (e.g., Camerer and Weber 1992). While there was a slight increase in the magnitude of the deterrent effect of risk for aggressive crimes, the effect was not nearly as large, nor was the difference statistically significant.

The policy implications of these findings are both considerable and controversial. When the amount of uncertainty about the rate of detection is increased, the deterrent effect of potential detection increased dramatically. This finding argues for the introduction of randomization into policy surveillance and patrol, changes that do not necessarily require any additional law enforcement resources. For example, police could rotate their enforcement across both offenses and places so that the risk of punishment is far more unpredictable than it normally would be to active offenders (see, e.g., Harcourt and Meares 2010). Thus, with the same amount of resources, a modification of police practice to increase uncertainty could enhance overall deterrence.

The findings from the Minneapolis Hot Spots Experiment, in which police officers were rotated throughout the city at various hot spots of crime and for certain lengths of duration (Koper 1995), provide relevant data to illustrate this point. Koper examined whether stronger dosages (in terms of longer instances) of police presence produced greater deterrence and if so, whether there was an optimal length for police presence at hot spots. Findings indicated that for police stops, the ideal dosage for police presence was about ten to fifteen minutes, and that longer presences had diminishing effects. The

policy implication from this finding is that police can maximize deterrence at hot spots by making proactive, short-duration stops on a random, intermittent basis, thereby making offenders continually guess where the police will be, how long they will be there, and where they may be going next. Although data on deterrence perceptions were not collected among would-be offenders, the random nature of police presence creates a widespread sense of the “Sword of Damocles,” wherein sanction-threat certainty is heightened because of a would-be offender not knowing where or when the sword might fall.

Future Directions

As a whole, the results emerging from analyses done so far on data from the Pathways to Desistance study paint a rich picture of how we may begin to think of deterring serious adolescent offenders. But this picture is still incomplete. On one hand, the results discussed here suggest the possibility of effective deterrence for a subgroup of these offenders. Many of these serious offenders contemplate and weigh risk, cost, and rewards when deciding to engage in offending. They tend to adjust these perceptions according to recent sanction experience and react to these changes in ways that reflect deterrence. However, what is known about their sanction-threat perceptions and how it relates to subsequent offending decisions still only explains a small portion of the totality of their decision-making process. We are still uncertain about why some individuals in this group desist while others persist, and why some similarly situated individuals seem to be deterrable while others are not.

We can identify some extensions of these results to inform both theory and policy and provide some clarity regarding this last question. One issue is why some offenders appear to change their perceptions while others do not. For instance, while the results from Anwar and Loughran (2011) show that, on average, offenders in the Pathways sample update their risk beliefs, there is much variability in the level of updating that individuals are doing—some update risk perceptions dramatically, while others update very little or not at all. Because experience can only explain part of this incongruity, it appears important to achieve better understanding of individual-level factors that are associated with willingness and/or ability to revise perceptions, particularly if such factors are identifiable and relevant legal factors. For example, if different mental health diagnoses are associated with an inability or unwillingness to adjust one’s perceptions, as results from Fagan and Piquero (2007) may suggest, then interventions aimed at stressing consideration of cost/risk in these individuals may prove beneficial.

Second, most of the research presented here is aimed at understanding perceived risks and, to a lesser extent, costs of offending. Yet, it is clear even from the results here and elsewhere that reward perceptions, in particular perceptions of personal rewards on top of monetary ones, are important factors in decisions to offend (Fagan and Piquero 2007). In fact, a recent meta-analysis of the relationship between perceived benefits and criminal offending showed that rewards are strongly related (and in the expected direction) to criminal offending across a range of offenders, offenses, and types of rewards measured (Baker and Piquero 2010). Deterrence based on rational choice assumes that individuals will be less likely to commit crime if expected costs are increased, but what if for some offenders, expected rewards are perceived to be so large that, even if their costs and risks can be increased, they are insufficient to exceed weighted benefits? Understanding the reward structure of offending and how serious and chronic offenders internalize these benefits needs to be elevated on the agenda of research in criminal decision making, especially if there are policies that can be adopted and subsequently designed to somehow diminish possible rewards.

This logic is similar to “supply-side” theories of economics, which encourage examining alternatives to simply stimulating demand for goods and services. In short, at the foundation of the deterrence framework, with its focus on the costs of crime, criminal justice policy has largely followed suit and focused most policy efforts at increasing the certainty and severity of punishment. However, as research convincingly shows, perceived *benefits* matter as well—and may matter more—to offending decisions. This implies that criminal justice policies should strongly consider efforts aimed at reducing the benefits associated with crime as offenders appear to be susceptible to those types of rational-choice considerations.

Third, with respect to adolescents, their maturity and development (particularly the interaction between maturity and risk perception) must be taken into account when considering their amenability to deterrence via sanction risks and costs. While many of the effects of deterrence for juveniles will come from what happens to them in institutional care, it is also important to note that there are other components to the perception of risk, cost, and reward, including peer and neighborhood concerns. For example, peers’ offending and the consequences of offending may influence individual sanction-threat perceptions and behavior (Stafford and Warr 1993; Paternoster and Piquero 1995; Piquero and Paternoster 1998), and neighborhoods may also be influential in individual perception formation as some neighborhoods, as a result of their crime experiences, may help form individual atti-

tudes (cf. Anderson 1999; Fagan and Wilkinson 1998). At a minimum, deterrence theory and research will need greater integration with other domains of adolescent and young adult development.

Finally, the results thus far from the Pathways study provide very strong evidence for a theoretical refinement of traditional rational-choice theory, which assumes that actors are rational in their decision making. While few would agree that any single individual is always perfectly rational in his or her decision making, rational-choice theory is generally preferred as an imperfect, but suitable, option to the nihilistic alternative that no individual is rational and thus offending decisions are arbitrary. However, this chapter begins to show that the integration of concepts from behavioral economics and behavioral decision theory, which predict ways in which individuals deviate from rational behavior, can be quite productive in explaining anomalies in rational choice. Furthermore, concepts that are part of these theories, for instance, “tipping effects” and “ambiguity,” are not merely theoretical constructs but, rather, are often useful concepts for informing justice policy. It seems clear that the continued integration of concepts from decision theory and behavioral economics can both refine traditional rational-choice theories and push forward the understanding of deterrence in new and strategic directions. The Pathways research suggests that offenders are indeed susceptible to sanction threats; they are more deterrable than previous conceptions make them out to be, and public policy efforts may be able to influence offender decision-making processes.

REFERENCES

- Andenaes, Johannes. 1974. *Punishment and Deterrence*. Ann Arbor: University of Michigan Press.
- Anderson, Elijah. 1999. *Code of the Streets: Decency, Violence, and the Moral Life of the Inner City*. New York: Norton.
- Anwar, Shamena, and Thomas A. Loughran. 2011. Testing a Bayesian Learning Theory of Deterrence among Serious Juvenile Offenders. *Criminology*, forthcoming.
- Apospori, E., G. P. Alpert, and R. Paternoster. 1992. The Effect of Involvement with the Criminal Justice System: A Neglected Dimension of the Relationship between Experience and Perceptions. *Justice Quarterly* 9: 379-92.
- Baker, Thomas, and Alex R. Piquero. 2010. Assessing the Perceived Benefits-Criminal Offending Relationship. *Journal of Criminal Justice* 38: 981-87.
- Beccaria, Cesare. (1764) 1985. *On Crimes and Punishments*. New York: Macmillan.
- Becker, Gary. 1968. Crime and Punishment: An Economic Approach. *The Journal of Political Economy* 76: 169-217.
- Camerer, Colin, and Martin Weber. 1992. Recent Developments in Modeling Preferences: Uncertainty and Ambiguity. *Journal of Risk and Uncertainty* 5: 325-70.

- Chassin, Laurie, Julia Dmitrieva, Kathryn Modecki, Laurence Steinberg, Elizabeth Cauffman, Alex R. Piquero, George P. Knight, and Sandra H. Losoya. 2010. Does Adolescent Alcohol and Marijuana Use Predict Suppressed Growth in Psychosocial Maturity among Male Juvenile Offenders? *Psychology of Addictive Behaviors* 24: 48-60.
- Chung, He Len L., Carol A. Schubert, and Edward P. Mulvey. 2007. An Empirical Portrait of Community Reentry among Serious Juvenile Offenders in Two Metropolitan Cities. *Criminal Justice and Behavior* 34 (11): 1402-26.
- Clarke, R. V., and D. B. Cornish. 1985. Modeling Offenders' Decisions: A Framework for Research and Policy. In M. Tonry and N. Morris, eds., *Crime and Justice: An Annual Review of Research*, vol. 24: 145-85. Chicago: University of Chicago Press.
- Cornish, Derek B., and Ronald V. Clarke. 1986. *The Reasoning Criminal: Rational Choice Perspectives on Offending*. New York: Springer-Verlag.
- Decker, S., R. Wright, and R. Logie. 1993. Perceptual Deterrence among Active Residential Burglars: A Research Note. *Criminology* 31: 135-47.
- Fagan, J., and A. R. Piquero. 2007. Rational Choice and Developmental Influences on Recidivism among Adolescent Felony Offenders. *Journal of Empirical Legal Studies* 4: 715-48.
- Fagan, Jeffrey, and Deanna L. Wilkinson. 1998. Guns, Youth Violence, and Social Identity. In M. Tonry and M. H. Moore, eds., *Crime and Justice: Annual Review of Research*, vol. 24: 105-88. Chicago: University of Chicago Press.
- Grasmick, H. G., and R. J. Bursik Jr. 1990. Conscience, Significant Others, and Rational Choice: Extending the Deterrence Model. *Law and Society Review* 24: 837-61.
- Harcourt, Bernard E., and Tracey L. Meares. 2010. Randomization and the Fourth Amendment. *Yale Law School Working Paper*.
- Horney, Julie, and Ineke Haen Marshall. 1992. Risk Perceptions among Serious Offenders: The Role of Crime and Punishment. *Criminology* 30: 575-92.
- Kahneman, Daniel, and Amos Tversky. 1979. Prospect Theory: An Analysis of Decisions under Risk. *Econometrica* 47: 313-27.
- Knight, George P., Delfino Vargas-Chanes, Sandra Losoya, Sonia Cota-Robles, Laurie Chassin, and J. M. Lee. 2009. Acculturation and Enculturation Trajectories among Mexican American Adolescent Offenders. *Journal of Research on Adolescence* 19 (4): 625-53.
- Koper, Christopher S. 1995. Just Enough Police Presence: Reducing Crime and Disorderly Behavior by Optimizing Patrol Time in Crime Hot Spots. *Justice Quarterly* 12: 649-72.
- Lochner, Lance. 2007. Individual Perceptions of the Criminal Justice System. *American Economic Review* 97: 444-60.
- Loewenstein, George. 1987. Anticipation and the Valuation of Delayed Consumption. *Economic Journal* 97: 666-84.
- Losoya, Sandra H., George P. Knight, Laurie Chassin, Michelle Little, Delfino Vargas-Chanes, Anne Mauricio, and Alex R. Piquero. 2008. Trajectories of Acculturation and Enculturation in Relation to Binge Drinking and Marijuana Use in a Sample of Mexican-American Serious Juvenile Offenders. *Journal of Drug Issues* 38: 171-98.
- Loughran, Thomas A., Edward P. Mulvey, Carol A. Schubert, Laurie Chassin, Laurence Steinberg, Alex R. Piquero, Sonia Cota-Robles, Jeffrey Fagan, Elizabeth Cauffman, and Sandra H. Losoya. 2010. Differential Effects of Adult Court Transfer on Juvenile Offender Recidivism. *Law and Human Behavior* 34: 476-88.
- Loughran, Thomas A., Edward P. Mulvey, Carol A. Schubert, Jeffrey Fagan, Alex R. Piquero, and Sandra H. Losoya. 2009. Estimating a Dose-Response Relationship

- between Length of Stay and Future Recidivism in Serious Juvenile Offenders. *Criminology* 47: 699-740.
- Loughran, Thomas A., Raymond Paternoster, Alex R. Piquero and Greg Pogarsky. 2010. On Ambiguity in Perceptions of Risk: Implications for Criminal Decision-Making and Deterrence. *University of Maryland Working Paper*.
- Loughran, Thomas A., Alex R. Piquero, Jeffrey Fagan, and Edward P. Mulvey. In press. Differential Deterrence: Studying Heterogeneity and Changes in Perceptual Deterrence among Serious Youthful Offenders. *Crime and Delinquency*, forthcoming.
- Loughran, Thomas A., Greg Pogarsky, Alex R. Piquero, and Raymond Paternoster. 2010. Reassessing the Certainty Effect in Deterrence Theory Using Insight from Prospect Theory. *University of Maryland Working Paper*.
- Matsueda, Ross L., Derek A. Kreager, and David Huizinga. 2006. Deterring Delinquents: A Rational Choice Model of Theft and Violence. *American Sociological Review* 71: 95-122.
- Mulvey, E., C. Schubert, and He Len Chung. 2007. Service Use after Court Involvement in a Sample of Serious Adolescent Offenders. *Children and Youth Services Review* 29: 518-44.
- Mulvey, Edward P., Laurence Steinberg, Jeffrey Fagan, Elizabeth Cauffman, Alex R. Piquero, Laurie Chassin, George P. Knight, Robert Brame, Carol Schubert, Thomas Hecker, and Sandra H. Losoya. 2004. Theory and Research on Desistance from Antisocial Activity among Serious Juvenile Offenders. *Youth Violence and Juvenile Justice* 2: 213-36.
- Mulvey, Edward P., Laurence Steinberg, Alex R. Piquero, Mitch Besana, Jeffrey Fagan, Carol A. Schubert, and Elizabeth Cauffman. 2010. Longitudinal Offending Trajectories among Serious Adolescent Offenders. *Development and Psychopathology* 22: 453-75.
- Nagin, Daniel S. 1998. Criminal Deterrence Research at the Outset of the Twenty-First Century. In Michael Tonry, ed., *Crime and Justice: A Review of Research*, vol. 23: 1-42. Chicago: University of Chicago Press.
- Nagin, Daniel S., and Raymond Paternoster. 1993. Enduring Individual Differences and Rational Choice Theories of Crime. *Law and Society Review* 27: 467-98.
- Nagin, Daniel S., and Raymond Paternoster. 1994. Personal Capital and Social Control: The Deterrence Implications of a Theory of Individual Differences in Criminal Offending. *Criminology* 32: 581-606.
- Nagin, Daniel S., and Greg Pogarsky. 2001. Integrating Celerity, Impulsivity, and Extralegal Sanction Threats into a Model of General Deterrence: Theory and Evidence. *Criminology* 39: 404-30.
- Nagin, Daniel S., and Greg Pogarsky. 2004. Time and Punishment: Delayed Consequences and Criminal Behavior. *Journal of Quantitative Criminology* 20: 295-317.
- Nagin, Daniel S., and Greg Pogarsky. 2003. An Experimental Investigation of Deterrence: Cheating, Self-Serving Bias, and Impulsivity. *Criminology* 41: 167-94.
- O'Donoghue, Ted, and Matthew Rabin. 2000. The Economics of Immediate Gratification. *Journal of Behavioral Decision Making* 13: 233-50.
- Parker, Jerry, and Harold Grasmick. 1979. Linking Actual and Perceived Certainty and Severity of Punishment. *Criminology* 17: 366-79.
- Paternoster, Raymond. 1987. The Deterrent Effect of the Perceived Certainty and Severity of Punishment: A Review of the Evidence and Issues. *Justice Quarterly* 4: 173.
- Paternoster, Raymond, and Alex R. Piquero. 1995. Reconceptualizing Deterrence: An Empirical Test of Personal and Vicarious Experiences. *Journal of Research in Crime and Delinquency* 32 (3): 251-86.

- Piquero, Alex R., Jeffrey Fagan, Edward P. Mulvey, Laurence Steinberg, and Candice Odgers. 2005. Developmental Trajectories of Legal Socialization among Serious Adolescent Offenders. *Journal of Criminal Law and Criminology* 96 (1): 267-98.
- Piquero, A. R., and R. Paternoster. 1998. An Application of Stafford and Warr's Reconceptualization of Deterrence to Drinking and Driving. *Journal of Research in Crime and Delinquency* 35: 3-39.
- Piquero, A. R., and G. Pogarsky. 2002. Beyond Stafford and Warr's Reconceptualization of Deterrence: Personal and Vicarious Experiences, Impulsivity, and Offending Behavior. *Journal of Research in Crime and Delinquency* 39 (2): 153-86.
- Piquero, A. R., and G. F. Rengert. 1999. Studying Deterrence with Active Residential Burglars. *Justice Quarterly* 16: 451-71.
- Piquero, A. R., and S. Tibbetts. 1996. Specifying the Direct and Indirect Effects of Low Self-Control and Situational Factors in Offenders' Decision Making: Toward a More Complete Model of Rational Offending. *Justice Quarterly* 13: 481-510.
- Pogarsky, Greg. 2002. Identifying Deterrable Offenders: Implications for Deterrence Research. *Justice Quarterly* 19: 431-52.
- Pogarsky, Greg, and Alex R. Piquero. 2003. Can Punishment Encourage Offending? Investigating the "Resetting" Effect. *Journal of Research in Crime and Delinquency* 40: 95-120.
- Pogarsky, Greg, Alex R. Piquero, and Raymond Paternoster. 2004. Modeling Change in Perceptions about Sanction Threats: The Neglected Linkage in Deterrence Theory. *Journal of Quantitative Criminology* 20: 343-69.
- Pratt, Travis C., and Francis T. Cullen. 2005. Assessing Macro-Level Predictors and Theories of Crime: A Meta-Analysis. In Michael Tonry, ed., *Crime and Justice: A Review of Research*, vol. 32: 373-450. Chicago: University of Chicago Press.
- Schubert, Carol A., Edward P. Mulvey, Thomas A. Loughran, Jeffrey Fagan, Laurie Chassin, Alex R. Piquero, Sandra Losoya, Laurence Steinberg, and Elizabeth Cauffman. 2010. Predicting Outcomes for Transferred Youth. *Law and Human Behavior* 34: 460-75.
- Schubert, Carol A., Edward P. Mulvey, Laurence Steinberg, Elizabeth Cauffman, Sandra H. Losoya, Thomas Hecker, Laurie Chassin, and George P. Knight. 2004. Operational Lessons from the Pathways to Desistance Project. *Youth Violence and Juvenile Justice* 2: 237-55.
- Sherman, Lawrence W. 1990. Police Crackdowns: Initial and Residual Deterrence. In Michael Tonry and Norval Morris, eds., *Crime and Justice: An Annual Review of Research*, vol. 12: 1-48. Chicago: University of Chicago Press.
- Stafford, Mark, and Mark Warr. 1993. A Reconceptualization of General and Specific Deterrence. *Journal of Research in Crime and Delinquency* 30: 123-35.
- Steinberg, L., H. Chung, and M. Little. 2004. Reentry of Young Offenders from the Justice System: A Developmental Perspective. *Youth Violence and Juvenile Justice* 1: 21-38.
- Steinberg, L. D., and E. S. Scott. 2003. Less Guilty by Reason of Adolescence: Developmental Immaturity, Diminished Responsibility, and the Juvenile Death Penalty. *American Psychologist* 58: 1009-18.
- Williams, Kirk, and Richard Hawkins. 1986. Perceptual Research on General Deterrence: A Critical Review. *Law & Society Review* 20: 545-72.
- Zimring, Franklin E., and Gordon Hawkins. 1973. *Deterrence: The Legal Threat in Crime Control*. Chicago: University of Chicago Press.