CHAPTER ONE

Experimenting with Crime and Criminal Justice

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INTRODUCTION

Experimenting with crime and social programs has a rich tradition. Some notable developments include the "lost letter" experiments of the 1970s (Farrington 1979) and the experimenting society concept advanced by Donald Campbell and others during the 1960s and 1970s (see Campbell 1969, 1979). Researchers used the lost letter experiments, which involved leaving cash in an apparently lost letter on the street, and other similar techniques to examine public dishonesty and minor deviance. The experimenting society concept is rooted in the large-scale social programs of the Kennedy and Johnson administrations and the need to identify valid and rigorous methods of evaluation. It has generated profound interest in the use of experiments to test the impact of criminological interventions.

Present-day experimental criminology very much has its roots in these developments (Sherman 2010).[1] At its heart are the methods of experimentation introduced in science in the seventeenth century. The defining feature of an experiment is control of the independent variable. An experiment is designed to test a causal hypothesis about the effect of variations in one variable on variations in another. A hypothesis cannot be tested experimentally unless it can be

[1] But Sherman has a slightly different take on the practice of experimental criminology, defining it as "scientific knowledge about crime and justice discovered from random assignment of different conditions in large field tests" (2010: 399). As we note here, and as discussed throughout the volume, a broader view of experimental criminology is advanced.

expressed in these terms. The methodological adequacy of any test of a causal hypothesis can be assessed on four major criteria (Campbell and Stanley 1966; Cook and Campbell 1979; Shadish, Cook, and Campbell 2002). Statistical conclusion validity refers to whether the two variables of interest truly are related. Internal validity refers to whether a change in one variable did produce a change in another. Construct validity refers to the theoretical constructs that underlie the measured variables; and external validity refers to how far the results can be generalized to different persons, settings, and times.[2]

One of the key benefits of experimental as well as quasi-experimental methods is the ability to produce a high degree of confidence in the observed effects. This is ultimately achieved through greater control of extraneous factors or threats to validity. It is important to move from correlation closer to causality; this is what well-executed and high-quality research designs allow. The experiment "attempts to demonstrate causality directly by building sufficient control into the design so that predicted outcomes can be observed at first hand" (Jupp 1989: 49).

Experimental criminology is closely linked to a larger and increasingly expanding evidence-based movement in social policy. In general terms, this movement is dedicated to the improvement of society through the utilization of the highest quality scientific evidence on what works. In many respects, the evidence-based approach is a direct descendant of the experimenting society concept. Indeed, the international Campbell Collaboration is named after Donald Campbell and continues his legacy of striving for the highest quality research – and now also the most rigorous syntheses of research in the form of systematic reviews – to contribute to improved public policy (Farrington, Weisburd, and Gill 2011; Welsh and Farrington 2011).

The evidence-based movement first began in medicine (Millenson 1997) and, more recently, has been embraced by the social sciences (Mosteller and Boruch 2002; Sherman et al. 2006). In an evidence-based model, the source of scientific evidence is empirical research in the form of evaluations of programs, policies, and practices. Not all

[2] It is difficult to investigate external validity within one study. It can be established more convincingly in systematic reviews and meta-analyses of a number of studies.

evaluation designs are considered equal, however; some are seen as more scientifically valid than others. Higher quality evaluation designs (i.e., those with higher validity, especially internal validity) are favored in determining "what works" in crime and justice interventions.

In the early decades of the twenty-first century, there is a growing consensus among scholars, practitioners, and policymakers that crime prevention and criminal justice programs and policies should be rooted as much as possible in scientific research. As the National Research Council and Institute of Medicine (2009: 373) recently recommended, "Federal and state agencies should prioritize the use of evidence-based programs and promote the rigorous evaluation of prevention and promotion programs in a variety of settings in order to increase the knowledge base of what works, for whom, and under what conditions." In an era of strained budgets and limited financial resources, the proven crime and justice programs will be those best positioned to receive scarce funding.

Our focus on experimental and quasi-experimental methods is not meant to diminish the contributions of other research. Rather, at a time of increased interest in and utility of experimental criminology (for contrasting views, see Sampson 2010; Weisburd 2010), we are particularly interested in the contribution of these methods to basic scientific knowledge and public policy, an area that has not yet been examined.

This book has two key aims. The first is to report on new and innovative scholarly contributions that experimental criminology is making to basic scientific knowledge and more effective public policy. To do so, we have brought together leading criminologists and scholars in related fields to report on their cutting-edge research in experimenting with crime and crime prevention and criminal justice.

The second, broader aim is to recapture the fuller meaning of experimental criminology and the evidence-based approach. Here, our interest is to examine (1) how these two important, interconnected developments are rooted in our profession's scientific training to move from correlation closer to causality; and (2) how they are *not* defined by one type of research design (i.e., the randomized controlled experiment), but instead are guided by the research question at hand.

This book is organized around three topical areas that are critical to experimental criminology: experimenting with crime and criminological theory; experimenting with crime prevention and criminal justice interventions; and assessing research evidence and new directions for research. This chapter uses the same organization to offer a view of the eleven chapters to follow.

EXPERIMENTING WITH CRIME

The first part of the book includes four chapters and reports on the latest research and new methodological advances in experimenting with crime. Key to this part is a discussion of the importance as well as challenges of experimental tests – both in the field and laboratory – of criminological theories and concepts, which are used to contribute to basic knowledge and the development of theoretically informed interventions.

In Chapter 2, Jean McGloin and Kyle Thomas report on a review of experimental tests of criminological theory. The chapter also discusses the feasibility of experimentation with theory – by drawing on lessons learned in other fields and experimental evaluations of criminological interventions – and outlines some suggestions for improving opportunities for experimental tests. The authors find that the recent interest and growth in experimental criminology has favored experimentation with criminal justice policy, intervention, and programs, whereas criminological theory has largely been overlooked. This state of affairs has important implications for the field. As the authors go on to note, "Experiments may play a crucial and necessary role in helping us determine what theories 'work,' for whom, and under what conditions, thereby suggesting which theories to keep, refine, and reject." But as crucial as this is for the advancement of criminological theory, the authors reject the notion that all we need is more randomized experiments. Instead, they call for greater methodological triangulation, with experimentation playing a key role. The authors also call for a higher level of theoretical specification of propositions in designing experimental research.

Experimental neurocriminology is the focus of Chapter 3 by Michael Rocque, Adrian Raine, and Brandon Welsh. Neurocriminology is an

emerging sub-discipline of criminology that applies neuroscience techniques to probe the causes and cures of criminal behavior (Raine and Liu 1998). Here, laboratory experiments are a major source of knowledge (see Falk and Heckman 2009). The authors' review of laboratory as well as field experiments points to three general conclusions. First, there appears to be replicable evidence of a relationship between brain functioning and crime. Second, there is demonstrable evidence that malnutrition predisposes individuals to antisocial behavior and aggression. Third, there is mixed evidence that fish oil (specifically omega-3) has an inhibitory effect on aggression and antisocial behavior, with the effect being more pronounced for at-risk individuals. The chapter concludes by considering prospects of experimentation in examining the connections between human biology and crime and intervention and treatment.

In Chapter 4, Christopher Sullivan examines the novel methodology of computer simulation experiments as applied to the development and testing of criminological theory. In recent years, some commentary and, to a lesser extent, formal research has focused on the limitations of existing approaches to the testing and development of criminological theory. At the same time, scholars have called for increasing use of experimental methods in assessing theory as well as the response to crime. Using those late developments as a starting point, this chapter explores the utility of computational simulation modeling (Berk 2008) in the development of criminological theory from both conceptual and methodological vantage points. As Sullivan explains, computer simulation modeling has come to prominence in certain sectors of criminological inquiry, but these techniques may be used profitably in other areas as well. This is demonstrated in an example considering the relationship between peers and delinquency. The discussion outlines some future possibilities for these methods in enhancing the cumulative understanding of crime and criminal behavior and presents some limitations that need to be considered in this work.

In Chapter 5, Maud van Bavel and Henk Elffers review the nature and opportunities for experimentation on the guardianship component of Cohen and Felson's (1979) routine activity theory. This has been the subject of criminological research in recent years, notably at

the Netherlands Institute for the Study of Crime and Law Enforcement (see, e.g., Hollis-Peel et al. 2011; Reynald 2010). Drawing on the experimental and quasi-experimental research on guardianship, the authors propose a refined view of the concept, distinguishing guardianship before a crime takes place ("preventive guardianship") from guardianship during or after a crime occurs ("repressive guardianship"). This has implications for experimentation, and the authors explore how future experiments can improve our knowledge in these areas.

EXPERIMENTING WITH CRIME PREVENTION AND CRIMINAL JUSTICE

The second part of the book includes five chapters and reports on the latest research and new methodological advances in experimenting with crime prevention and criminal justice programs and policies. Here, the focus is on assessing effectiveness and understanding what works for whom, under what conditions, and in what contexts. Included is coverage of leading criminological interventions, including early childhood programs, hot spots policing, and correctional treatment for juvenile and adult offenders. Also key to each chapter is a discussion of implications for public policy.

In Chapter 6, David Farrington and Brandon Welsh report on what has been learned from long-term follow-ups (minimum ten years post-intervention) of randomized controlled experiments in criminology. Long-term follow-ups of crime prevention programs are needed to assess if benefits persist or decline over time (Farrington and Welsh 2007). In the case of individual-level studies, this also allows for an assessment of effects during important life-course stages of development as well as key transitions from adolescence to early adulthood and into the later adult years. Far too often follow-ups of programs are too short, sometimes no longer than one or two years. So long as they are able to maintain their integrity (e.g., low attrition, no differential attrition, no crossover between treatment and control participants), randomized experiments offer a unique research method to examine the long-term effects on criminological interventions (Farrington and Welsh 2006). The authors

assess a range of key issues, including long-term effects on offending, changes in effects over time, and cost–benefit analysis results, as well as the advantages and challenges of conducting long-term follow-ups in criminology.

In Chapter 7, Charlotte Gill and David Weisburd report on an experimental method, known as block randomization, for increasing equivalence in small-sample place-based experiments. Crime scholars and practitioners have increasingly pointed to the potential benefits of focusing crime prevention efforts on the small number of crime places, or crime "hot spots," that generate the bulk of urban crime problems (Braga and Weisburd 2010). Place-based experiments in policing have had tremendous impact on crime prevention policy and practice and have become a model for the use of experimental methods. Place-based policing experiments, however, typically have a small number of cases and, under traditional perspectives on methodological standards, small *N* studies are viewed as limited in testing interventions (Farrington and Welsh 2006). Drawing on statistical theory and an empirical illustration, the authors argue that block randomization techniques can help overcome these limits.

Chapter 8, by Doris MacKenzie, Janani Umamaheswar, and Li-Chen Lin, focuses on another important methodological advancement in experimental criminology: multisite randomized experiments. Multisite randomized experiments are studies in which independent experiments are undertaken simultaneously at two or more sites (Boruch 1997). The research is coordinated across sites and involves deliberate planning and coordination. The goal is to enhance understanding between and within sites to identify how interventions work, for whom, and in what settings. Multisite randomized experiments are rare in criminology but used routinely in medical and public health research. The authors note that the wide variation existing across criminal justice agencies warrants caution in using a single-site study as the basis for broad public policy decisions; specifically, findings from one site could depend on the characteristics of the participant population, the criminal justice agency, the treatment protocol, or the staff. The uniqueness of any one site means the results of one study may not carry over to other sites. Using key examples from criminal justice,

this chapter considers some of the benefits and drawbacks to using multisite studies as well as the challenges involved in planning and implementing such studies.

The final two chapters in this part focus on rigorous quasi-experimental designs in the evaluation of crime prevention and criminal justice programs and policies. In Chapter 9, Emily Owens and Jens Ludwig examine the technique of regression discontinuity. As the authors relate, it is very much a different type of research design that takes advantage of "natural experiments," events that are far more common than many criminology researchers currently appreciate. Regression discontinuity designs take advantage of the fact that some localities barely miss the cutoff for state assistance and that some people only barely qualify for public support. To the extent that the "barely missed" and "barely qualified" people are roughly identical except for their treatment status, these designs can approximate true experiments (Berk 2010). The chapter provides key details on the use of regression discontinuity, discusses common challenges facing the design, reviews the types of substantive applications and situations for which this design seems particularly well suited within criminology, and discusses some of the examples that currently exist in the field.

In Chapter 10, Anthony Braga reports on the opportunities for high-quality evaluation designs in the field when random assignment is not feasible. Field settings sometimes limit the use of randomized controlled experiments in the evaluation of crime prevention and criminal justice programs (Lum and Yang 2005). Programs are often implemented with little or no thought toward evaluation plans. At other times, even when a priori evaluation plans are made, random assignment is judged not to be feasible because of political, ethical, or practical concerns. In these situations, quasi-experimental designs can be used as alternative approaches to determine program impacts. This chapter presents insights on the author's first-hand experiences in using, and the process of implementing quasi-experiments to generate the most rigorous evaluation possible given the realities of field conditions at the time the research was conducted. Concluding thoughts on the value of quasi-experimentation in the assessment of crime and justice interventions are also presented.

ASSESSING RESEARCH EVIDENCE AND NEW DIRECTIONS

This introductory chapter opened by professing the important link between experimental criminology and an evidence-based approach to crime policy. Indeed, it is a central theme of the book, and a number of chapters draw attention to it. There are many benefits to this relationship, but there are also some polarizing views. The last part of the book, which includes two chapters, is concerned with evidence-based crime policy and new avenues for research in experimental criminology.

Chapter 11, by Brandon Welsh, Peter van der Laan, and Meghan Hollis, examines the public policy tools of systematic review and cost–benefit analysis and the priority each places on experimental and high-quality quasi-experimental research. The authors note that, although systematic review and cost–benefit analysis seek somewhat different ends, both are characterized by highly rigorous methodologies that follow a standard set of procedures designed to reduce potential bias and produce valid results. The authors find that systematic review and cost–benefit analysis are making important contributions to the advancement of evidence-based crime policy in the United States and other Western countries. They profile the pioneering efforts being undertaken in Washington State, which has used these research tools to lay the groundwork for the most comprehensive approach to evidence-based practice in juvenile justice in the country.

In Chapter 12, the book's concluding chapter, the three of us discuss the need for integrating experimental and observational methods as a way to advance experimental criminology further and contribute to more sound policy in crime prevention and criminal justice. In our view, although criminologists generally recognize the challenges to valid causal inference from omitted variables and selection bias, the field of criminology remains divided between those who adopt a "randomized-trial-or-bust" approach and those who are content to consider findings from a wide range of research designs on a case-by-case basis. In this context, we consider the arguments made by both camps and set out a framework for interpreting the findings of theoretical and policy intervention tests based on experimental, quasi-experimental, and observational research methods.

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