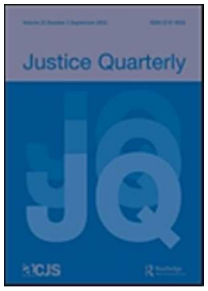

Serious Youth Violence and Innovative Prevention: On the Emerging Link between Public Health and Criminology

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On the Emerging Link between Public Health and Criminology

Abstract

It was not so long ago that scholarly writings pointed to the vast chasm that existed between criminal justice and public health approaches to understanding and controlling interpersonal violence. Other scholarship of the day examined how criminal justice and criminology could benefit from adopting elements of the public health approach. For sure, there still exist many differences in how the two disciplines approach the violence problem, but over the years there have been some promising developments at the intersection of public health and criminology. This paper surveys the evolving link between public health and criminology, with a special focus on serious youth violence. It is concerned with both research and practice and how these efforts – across primary, secondary, and tertiary prevention strategies – are contributing to improved public health-criminology collaborations or public health-influenced programs that have a discernable impact on youth violence.

Keywords: public health; youth violence; violence prevention; evidence-based policy

In the early to mid-1990s, "epidemic" became a common modifier attached to "youth violence" (Cook & Laub, 1998). Today, although it is not universally recognized and there are some exceptions, the word "declining" is used far more frequently to describe trends in youth violence (cf., Cook & Laub, 1998; 2002). With a number of plausible explanations for the changing facts on the ground (see, e.g., Blumstein & Wallman, 2006), it is unlikely that this problem could have been so significantly affected without knowledge and effort from multiple fields of science and practice (Dodge, 2001). The migration of public health perspectives to the understanding of crime and justice appears to be part of the process by which this change came about. Whether implicit or explicit, some core ideas and technology from public health have influenced criminologists and practitioners alike in a way that has had a discernable impact on the shared problem of youth violence. With serious youth violence as its focus, this paper surveys the evolving connection between public health and criminology. It is concerned with both research and practice and how these efforts are contributing to improved public health-criminology collaborations or public health-influenced programs that have a discernable impact on youth violence.

Background

In 2001, the first U.S. Surgeon General's report on youth violence was published (U.S. Department of Health and Human Services, 2001). It drew heavily on the work of developmental and criminological research on risk factors. Prior to that, researchers in this area had begun to take a similar approach to understanding research and policy problems as those in the public health field. This work led to the identification of conditions in individuals, families, communities, and society-at-large that foster violent behavior (Dodge, 2001; Hawkins, Arthur, &

Catalano, 1995). Although perhaps more provisional in that literature, this is similar to the notion that certain conditions or behaviors, such as high cholesterol or smoking, increase the chance that an individual will suffer from heart disease later in life. The notion that identified risk factors can point toward targets for intervention and possibly inform its course is now inherent in the response to youth violence problems.

In recent years the fields of violence prevention and criminology more generally have begun to place a greater emphasis on evidence-based decision-making. In the area of violence prevention and intervention, some of this work has followed the example provided by medical studies that utilize rigorous scientific research (specifically, randomized controlled trials) to establish program efficacy and effectiveness, followed by systematic reviews and meta-analyses of the best available evidence from that original research (Welsh & Farrington, 2011). Although the terminology and contexts are often different, there are a host of implicit links between public health and criminology/criminal justice researchers in terms of their approach to gathering and analyzing information. This is especially true when one considers research focused on preventing youth violence, which rests in part on risk factor and concentrated epidemic frameworks and informs intervention and problem solving research (Shepherd & Farrington, 1993).

Even in locations and populations where there are relatively high rates of risk factors (exposure), there tends to be some concentration of problem outcomes in individuals or subgroups (incidence). Rose (2001) discusses this in terms of distinguishing between causes of cases (i.e., those groups or populations that tend to be at higher risk such as national differences in hypertension) and causes of incidence within that pool (i.e., individual susceptibilities to heart disease). These principles are evident in youth violence as well. Relatively few individuals have

been identified as being responsible for the bulk of observed violent behavior (Blumstein et al., 1986; Wolfgang, Figlio, & Sellin, 1972) and they tend to come from populations that are disproportionately exposed to general risk factors. This signals a need to focus on both individual- and group-level risk factors in both violence and disease. Additionally, just as disease can be viewed in a multi-causation model where risk is seen to emanate from several sources (Rothman & Greenland, 2005), violent juveniles tend to have other co-occurring problems and generally face a cumulative package of risks (Farrington & Loeber, 2000). The need to unravel the etiology of the observed problem – in order to develop a sense of the process that gives rise to it – is an essential part of the public health approach (Mercy et al., 1993).

Although both public health and criminology have come to rely on rigorous designs in intervention research (Moore, 1995; Moore et al., 1994), in some ways the fields have faced similar challenges in sorting out the etiology of problem outcomes and identifying effective responses. In particular, the need to rely on non-experimental, observational studies in the initial stages of that evidentiary process is apparent. For example, the link between cigarette smoking and disease had to be established via observational, nonintervention studies (Cochran, 1983; Rosenbaum, 1995), and the establishment of risk factors for youth violence has proceeded in a similar fashion (Farrington & Loeber, 2000).

Dodge (2001) draws parallels between the consideration of risk factors in health outcomes and the field of developmental psychopathology, where risk factors for violent behavior are identified and studied. Ideally, this is followed by research on the processes that link intervening mechanisms to problem outcomes. Researchers and officials can then in turn develop a sense of how to effectively intervene with the population that is at risk, using knowledge that emerges from this process—along with evidence of best practices in the area.

The Seattle Social Development Project demonstrates this progression in a violence/problem behavior prevention context (Hawkins et al., 1999; 2007). Evidence was drawn from a growing pool of research on risk and protective factors and subsequently used to develop a theory about the developmental process underlying the problem. At the same time, the researchers were engaged in primary and secondary prevention programming in which reductions in violent behavior were an important outcome.

While many crime researchers have embraced the knowledge of risk factors as a starting point for understanding problem outcomes, the approach has also begun to permeate practice. So, just as health practitioners rely on screening practices to evaluate symptoms and identify appropriate courses of treatment, the practice of screening and assessment for risk and needs has become commonplace in the juvenile justice system and other community agencies that have contact with this population (LeBlanc, 1998; Schwalbe, 2008).

While public health research has clearly influenced the understanding of individual at-risk cases and provided a platform against which they could be identified and explained, violence also stems from situational and environmental factors (Farrington & Loeber, 2000), such as the use of alcohol or the availability of weapons. Beginning with the youth gun violence epidemic of the 1990s and continuing through today, collaborations between public health researchers and criminologists have yielded crucial insights on the various pathways through which convicted felons, juveniles, and other prohibited persons illegally acquire firearms. As summarized in recent reviews (e.g., Wintemute, Braga, & Kennedy, 2010; Wintemute & Braga, 2011), among the main findings of these collaborative studies are: (1) New guns are recovered disproportionately in crime. (2) Some licensed firearm retailers are disproportionately frequent sources of crime guns; these retailers are linked to more guns traced by law enforcement

agencies than would be expected from their overall volume of gun sales. (3) Under test conditions, significant proportions of licensed retailers and private party gun sellers will knowingly participate in illegal gun sales. (4) On average, about one-third of guns used in crime in any community are acquired in that community, another third come from elsewhere in the same state, and a third are brought from other states. (5) There are longstanding interstate trafficking routes for crime guns, typically from states with weaker gun regulations to states with stronger ones. The best known of these is the "Iron Pipeline" from the Southeast to the mid-Atlantic and New England.

Public health perspectives also point to the importance of identifying and understanding problems as they aggregate across individuals or groups (Moore et al., 1994). Frequently this involves some type of geographic or network-based concentration of violence that is not unlike a localized transmission of disease. For example, Braga and colleagues' (2010) and Morenoff and colleagues' (2001) studies looking at the geographic concentration of violence in local areas has some parallels with Kerani and colleagues' (2005) study of the concentration of four different sexually-transmitted diseases in a large county. Localized violence problems have been the subject of a great deal of inquiry and analysis by both academics and police agencies. For example, research on violence hot spots is among the more practically useful contributions of academic criminology to emerge in the last 25 years (Braga & Weisburd, 2010). More recently, sophisticated network analyses of street gangs and high-rate youth offenders suggest that most of the risk of gun violence concentrates in small networks of identifiable individuals and that the risk of homicide and non-fatal gunshot injury is associated not only with individual-level risk factors, but also the contours of one's social network (see, e.g., Papachristos, 2010). The identification and analysis of violence problems with respect to area concentration and

underlying networks bears a close correspondence to the idea of the "social epidemiology" of HIV/AIDS, as described by Poundstone, Strathdee, and Celentano (2004).

The underlying etiology of hot spots and their analogs (e.g., repeat offenders, victims) generally points toward the need for a concerted, targeted prevention strategy. In recent decades, a great deal of research on crime has grown out of the practical desire to understand these problems, develop viable interventions, evaluate the results, and disseminate successful strategies (Clarke, 1997; Elliott & Mihalic, 2004). This action-oriented approach is similar to the public health posture towards understanding and intervening in youth violence problems (Mercy et al., 1993). Figure 1 presents a well-known public health model of the scientific approach to serious youth violence prevention. The initial stage of the process entails identifying and tracking the problem (e.g., elevated level of violent crime in a neighborhood) by means of some surveillance system. This is followed by an effort to understand the risk factors that contribute to the problem (e.g., actions between rival gangs), and develop an approach to ameliorate the problem and evaluate it. Finally, the prevention strategy may be introduced to other areas that face similar problems.

[Figure 1 about here]

Identifying something as a public health problem can mobilize more stakeholders, bringing the possibility of elevated buy-in to the possibility of intervention and potentially leveraging greater financial and human resources. Whereas the orientation of justice practitioners generally trends toward the reactive (Moore et al., 1994), framing the issue in this manner inherently calls for a proactive, multidisciplinary response (Dodge, 2001). Effective prevention strategy is frequently developed by, or in close association with, researchers and generally requires close adherence to an established model (Elliott & Mihalic, 2004; Welsh,

Sullivan, & Olds, 2010). So, while the research/practice gap appears to have narrowed somewhat in the justice field, which bodes well for violence prevention, the gap between the ideas of practitioners in the two communities seems to have closed as well—particularly when compared to earlier analyses of the links between them (e.g., Moore et al., 1994). This is most evident in those communities where violence prevention strategies have been implemented and closely evaluated for targeted reductions in serious youth violence (see, e.g., McGarrell et al., 2010).

In the sections that follow we profile innovative primary, secondary, and tertiary prevention methods to reduce serious youth violence. We do so to illustrate the emerging and, in our view, highly promising link between public health and criminology.

Primary Prevention

A primary focus involves efforts to prevent youth violence well before it occurs; that is, before any signs of it become evident. It aims to positively influence early risk factors for violent offending, including childhood behavior problems (e.g., aggressiveness, acting out in school), poor child-rearing practices (e.g., poor parental supervision, harsh or inconsistent discipline), and poor school performance or school failure (Farrington & Welsh, 2007). Pediatricians, family physicians, health nurses, and school teachers are among the many providers that are involved in primary prevention of youth violence.

One way that health nurses play a key role in primary prevention is through the provision of family support for new mothers and their children in the form of home visits. One of the main goals of home visits is the prevention of child abuse and neglect. This focus is particularly

relevant to criminology, partly because children who are physically abused or neglected have an enhanced likelihood of becoming violent offenders later in life (Maxfield & Widom, 1996).

The best known home visiting program and the only one with a direct measure of youth violence is the Nurse-Family Partnership (NFP) developed by David Olds (Olds et al., 2007). NFP was first tested in Elmira, New York, in the early 1980s. Four hundred first-time mothers were randomly assigned to receive home visits from nurses during pregnancy, or to receive visits both during pregnancy and during the first two years of life, or to a control group who received no visits. Each visit lasted just over one hour and the mothers were visited on average every two weeks. The home visitors gave advice about prenatal and postnatal care of the child, about infant development, and about the importance of proper nutrition and avoiding smoking and drinking during pregnancy.

The results of this experiment showed that the postnatal home visits caused a significant decrease in recorded child physical abuse and neglect during the first two years of life, especially by poor, unmarried, teenage mothers; 4% of visited versus 19% of nonvisited mothers of this type were guilty of child abuse or neglect (Olds et al., 1986). In a 15-year follow-up (13 years after program completion), which included 330 mothers and 315 children, significantly fewer experimental compared to control group mothers were identified as perpetrators of child abuse and neglect (29% v. 54%), and, for the higher risk sample only, significantly fewer treatment mothers, in contrast to the controls, had alcohol or substance abuse problems or were arrested. At the age of 15, children of the treatment mothers had committed significantly fewer violent and other major criminal acts than their control counterparts (a mean of 3.02 compared to 3.57; Olds et al., 1998). In the latest follow-up at age 19, compared to their control counterparts, girls of the full sample of mothers had incurred significantly fewer arrests and convictions and girls of the

higher risk mothers had significantly fewer children of their own and less Medicaid use; few program effects were observed for the boys (Eckenrode et al., 2010). Large-scale replications in Memphis and Denver have also shown a wide range of positive effects for children and mothers (Olds et al., 2007).

Today, NFP operates in 400 counties in 32 states, serving more than 21,000 families each year. It is also being implemented in many other countries, including Australia, Germany, Norway, and the United Kingdom. Crucial to each of these sites and the program's continued expansion is a commitment by local providers to ensure fidelity to the model. As programs are implemented in new settings or scaled-up for wider public use, there is the very real threat that the program will become diluted and its effectiveness greatly reduced. As a sign of the importance of this concern, a national office was established to work with local providers to make sure that NFP programs are implemented and operated as planned and to help address local needs. This marks a crucial advancement in the local delivery of evidence-based violence prevention programs.

Several recent systematic reviews and meta-analyses on the effects of youth violence prevention (see Derzon, 2006; Hahn et al., 2007; Limbos et al., 2007; Wilson & Lipsey, 2007) have also reported on the effectiveness of primary prevention in schools. Wilson and Lipsey's (2007) meta-analysis of school-based prevention programs included 249 studies, of which 77 were universal or primary prevention. Among the different intervention types (i.e., primary, secondary, special schools/classes, and comprehensive), primary prevention programs were found to be the most effective (along with secondary prevention programs) in reducing aggressive and disruptive behavior, with an overall weighted mean effect size of $d = 0.21$.

One effective school-based primary prevention program is the Seattle Social Development Project (SSDP), which has drawn heavily on the connection between public health and criminology. As noted above, SSDP is founded upon criminological knowledge of risk and protective factors.

SSDP is a multi-component program combining parent training, teacher training, and skills training for children. About 500 first grade children (aged 6) in 21 classes were randomly assigned to be in experimental or control classes in the original study. The parents and teachers of children in the experimental classes received instruction in methods of child management and instruction, which were designed to increase children's attachment to their parents and their bonding to school, based on the assumption that delinquency was inhibited by the strength of social bonds. The children also were trained in interpersonal cognitive problem-solving. Their parents were trained to notice and reinforce socially desirable behavior in a program called "Catch Them Being Good." Their teachers were trained in classroom management, for example, to establish rules and routines at the beginning of the school year, to provide clear instructions and expectations to children, to reward children for participation in desired behavior, to use methods least disruptive to instruction to maintain order in the classroom, and to teach children prosocial methods of solving problems.

In an evaluation of this program 18 months later, when the children were in different classes, Hawkins et al. (1991) found that the boys who received the program were significantly less aggressive than the control boys, according to teacher ratings. The experimental girls were not significantly less aggressive, but they were less self-destructive, anxious, and depressed. In a later follow-up when the study participants were 18 years old, Hawkins et al. (1999) found that the full intervention group (those who received the intervention from grades 1-6) reported

significantly less violence, less alcohol abuse, and fewer sexual partners than a late intervention group (grades 5-6 only) or the controls. In the latest follow-up, Hawkins et al. (2008) found that the full intervention group (compared to the comparison groups) reported significantly better educational and economic attainment, mental health, and sexual health by age 27 years. Interestingly, no effects were found for substance abuse and criminal activity at ages 24 or 27 years. This loss of effectiveness is unusual, and holds important implications for understanding the transition from adolescence to early adulthood.

Also noteworthy is the innovative and increasingly evidence-based "operating system" approach to violence prevention. This approach brings a dual focus on community mobilization and the use of scientific evidence. One of the best known and tested operating systems designed to prevent violence and other problem behaviors is Communities That Care (CTC; Hawkins, Catalano, & Arthur, 2002). CTC organizes knowledge of risk and protective factors into a strategy for strengthening protection in any social unit. It is modeled after large-scale community-wide public health programs designed to reduce illnesses such as coronary heart disease by tackling key risk factors in the community (e.g., Perry, Klepp, & Sillers, 1989). Consistent with health promotion approaches (e.g., Kaplan, 2000), there is great emphasis on enhancing protective factors and building strengths. The community could be a city, a small town, or even a neighborhood or public housing community. Violence and other problem behaviors can be prevented by aiding communities in assessing levels of risk and protection faced by their young people and then choosing and implementing prevention strategies that have demonstrated effectiveness. Primary prevention programs are important to this strategy as well as secondary and tertiary programs.

Results from the most recent CTC evaluation, known as the Community Youth Development Study (CYDS), point to the effectiveness of this operating system approach. The CYDS involved 24 matched communities across seven states, which were randomly assigned to either implement the CTC system or to carry out prevention services as usual. In a panel of over 4,400 young people in CTC and control communities followed from grade 5 through grade 8, young people in CTC communities were 25% less likely to have initiated delinquent behavior than controls and 31% less likely to have engaged in a variety of delinquent acts (e.g., assault, theft). Significant reductions in alcohol and tobacco use were also observed in CTC communities compared with controls (Hawkins et al., 2009).

Secondary Prevention

Whereas primary prevention is targeted broadly to the population, a secondary prevention focus entails implementation "on a selected scale, for children [or other relevant units] at enhanced risk of youth violence" (USDHHS, 2001, p. 111). These programs are also sometimes designated as "selective" prevention strategies (Farrell & Flannery, 2006). This is congruent with public health models that focus on identifying risk factors for disease in individuals and subsequently attempting to address those at-risk cases in order to forestall the emergence of later problematic outcomes. Early aggressive behavior, ineffective parenting, poor social skills, and exposure to delinquent peers are among the risk factors that might be used to identify possible candidates for secondary prevention efforts directed towards later violent behavior. If successful, these programs would reduce the chances that those youth – who appear to be the members of the population most likely to engage in violence at the point of intervention – actually become involved in violent behavior.

These initiatives tend to be implemented in schools and other community-based social service settings. Like the aforementioned primary prevention initiatives, secondary prevention can also be integrated into medical and public health settings (see Borowsky, Mozayeny, Stuenkel, & Ireland, 2004), but usually with enhancements to target specific risks of the youths and families involved (e.g., social skills training, parent training). Because this is a more selective group than the one targeted in primary prevention, there may be greater opportunity for delivery of intensive and varied services (Fields & McNamara, 2003). Secondary prevention programs still occur relatively early in a youth's development, so evaluators frequently have to consider intermediate outcomes, such as aggressive behavior, that may eventually lead to interpersonal violence. This is also the case in medical and public health interventions where there is a desire to impact "surrogate clinical endpoints," which are intermediary outcomes expected to mediate the effects between the intervention and its long-term target (Ludwig, 2012, p. 34).

Reviews of secondary prevention programs by Fields and McNamara (2003) and Molina and colleagues (2005) indicated that the majority of interventions show positive effects on violence and related outcomes. In looking at randomized controlled trials, Limbos and colleagues (2007) identified three successful secondary-level interventions in their systematic review of an array of violence prevention programs. The three programs included the Baltimore Moving to Opportunity experiment, which involved residential relocation of families with children at-risk for violence (Ludwig, Duncan, & Hirschfield, 2001; see Kling, Ludwig, & Katz, 2005, for results from the multisite evaluation); a community-based intervention that provided individual counseling and mentoring to youth and their families (Hanlon et al., 2002); and

therapeutic child-care aimed at abused, neglected, and at-risk children (Moore, Armsden, & Gogerty, 1998).

The Chicago Child-Parent Center (CPC) program was targeted to black and Hispanic youth from low-income families and neighborhoods. The intervention, which can be characterized as "preschool-plus," comprised educational programming and family support services for children from ages 3 to 9 (Reynolds, Temple, Robertson, & Mann, 2001). The 25 centers were located in the most distressed areas of Chicago. Evaluations of the program compared CPC participants (N~900) to a group of youth matched on age, eligibility for government-funded programs, and family and neighborhood poverty (N~500) (Reynolds et al., 2001; 2011). The 15 year follow-up study, which focused on educational and justice-related outcomes through age 20, showed that, on average, youth in the treatment group had a significantly lower prevalence of juvenile arrests (17%) relative to comparison cases (25%) (Reynolds et al., 2001). This significant effect was also observed for violent arrests specifically (9% vs. 15%). Positive results were found for official justice contact in a follow-up at age 28 as well (Reynolds et al., 2011).

The Incredible Years Parent, Teacher, and Child training series program is one of only 11 model programs identified by the Blueprints for Violence Prevention group at the University of Colorado (Center for the Study and Prevention of Violence, 2007). This program is selective in that it targets children who display behavior that suggests some level of conduct problems during early to late childhood. The program is delivered in a group training format and comprises elements of cognitive behavioral therapy and self-management principles. An evaluation of the parent training component of the Incredible Years found that youth in the treatment program had significantly lower levels of behavioral problems at the one year follow-up point compared to

baseline (Webster-Stratton, Hollinsworth, & Kolpacoff, 1989). Webster-Stratton and Hammond (1997) compared three Incredible Years treatment groups (Parent Training, Child Training, Parent and Child Training) against a waiting-list control and found that, in all cases, those groups had significantly lower levels of behavioral problems as measured by multiple validated instruments (e.g., Child Behavior Checklist [CBCL]). The positive intervention effects on behavioral problems, which can be considered an intermediate outcome that has a relationship with later violent offending, generally held at the one year follow-up. A similar pattern of treatment effects emerged when researchers observed children's interactions with their peers. In all three comparisons, the treatment group children exhibited significantly lower levels of negative conflict management with their best friend in a play situation where a potential quarrel was introduced.

The Montreal longitudinal-experimental study is mentioned in multiple reviews of effective secondary prevention initiatives. At-risk males were identified through teacher ratings of disruptive behavior in kindergarten (Tremblay, Pagani-Kurtz, Mâsse, Vitaro, & Pihl, 1995). Youth were also screened based on their ethnicity and parents' level of education. A total of 319 youth were then assigned to experimental and control conditions. The treatment involved multidisciplinary delivery (by trained child-care and social workers and a psychologist) of (a) parental training in child rearing practices and (b) social skills development for children. The parental training program included behavioral monitoring and reinforcement practices, effective discipline, and family crisis management techniques. The children were exposed to social skills training in small groups with prosocial peers nominated by teachers; this included ten sessions covering skills in problem solving and self-management in conflict situations. Specifically, coaching, peer modeling, role playing, and reinforcement on such topics as "how to help," "what

to do when you are angry," and "how to react to teasing" were used in small group sessions in a school setting.

The effectiveness of the treatment was evaluated longitudinally (ages 10 to 15) across several dimensions, including self and teacher reports of problem behavior and juvenile court records. By age 12 (3 years post-treatment), boys in the experimental group were significantly less likely to be involved in fights than the controls (Tremblay et al., 1992). A study with a lengthier follow up period revealed that youth in the treatment group had somewhat lower levels of teacher-reported disruptive behavior through age 15; the difference was not statistically significant, however. Trends in self-reported general delinquency increased over the follow-up period (consistent with general age trends in delinquent behavior), but the treatment group had significantly lower levels of delinquency than the control group during the six years following treatment. Juvenile record data did not show significant differences between the treatment and control groups. A later follow-up (to age 24) found that fewer treatment than control group youth had a criminal record (11%) and the effect was marginally significant (Boisjoli, Vitaro, Lacourse, Barker, & Tremblay, 2007).

A study by Borowsky and colleagues (2004) focuses on the degree to which medical professionals have increasingly become involved in the prevention of violence and associated injuries. They studied the effectiveness of a primary care-based violence prevention program for youth ages 7 to 15 that had an elevated score on a brief psychosocial risk screening instrument (Pediatric Symptom Checklist [PSC]). Eligible youth and their parents (N=224) were randomly assigned to intervention and control conditions. The intervention consisted of two parts. First, the clinician either saw the PSC screen results or they did not. If they saw the results, the clinician could then engage in appropriate follow-up and make referrals to indicated services (the

vast majority of these cases were provided with referral services or additional follow-up). Second, a telephone-based, positive parenting curriculum was offered to the treatment group. The researchers found statistically significant differences between the two groups on parental-reported aggressive and delinquent behaviors (CBCL).

Secondary prevention may be targeted at *areas* identified on the basis of risk factors as well. For example, in Los Angeles, a Business Improvement District (BID) intervention was implemented in areas with identified community-ecological risk factors (e.g., physical disorder, concentrated poverty) (MacDonald et al., 2009). Using a nonequivalent matched comparison group (n=375), a BID intervention, which focused on public safety, area beautification, and promotional marketing, was shown to have a significant impact on some violent crimes (e.g., robbery) in areas in which it was implemented (n=362). It was also suggested that there was a "dose-response" relationship – as areas considered to have stronger BID interventions experienced greater reductions in violent crime.

As this review shows, in the last few decades, a number of secondary prevention programs, implemented in varied settings based on an array of risk factors, have been identified as effective for children and adolescents. This offers a clear sense that prevention programming can be successful with youth (and areas) already faced with risk factors for later violent behavior if it is properly targeted towards those at-risk and implemented with fidelity to the intervention model (Elliott & Mihalic, 2004). Further, because these cases are already at elevated risk, the potential cost-benefit yield of these interventions may be readily demonstrable in both the short and long-term, serving as a useful midpoint between the global focus of primary prevention and the immediate corrective emphasis of tertiary prevention strategies. As Ludwig (2012) has pointed out, although earlier intervention may be recommended on several grounds, there are

also reasons that developing and applying prevention (and even remediation) on the basis of observed risk levels may be beneficial. Specifically, looking at economies of scale, more intensive intervention may be provided to individuals or areas at greater risk for later violent behavior for the same cost as providing universal primary prevention.

Tertiary Prevention

Tertiary prevention involves attempts to minimize the course of a problem once it is already clearly evident and causing harm. In public health terms, tertiary prevention efforts intervene after an illness has been contracted or an injury inflicted, and seeks to minimize the long-term, devastating consequences of the disease or injury (Committee for the Study of the Future of Public Health, 1988). Criminologists and public health researchers have both contributed to a growing body of evaluation evidence that shows a wide range of effective tertiary treatments (e.g., cognitive behavioral therapy, functional family therapy; Lipsey, 2009). This development has been important and has helped to undergird the movement toward evidence-based violence prevention programs (Greenwood, 2006). Alongside it have developed some strategic innovations launched by criminal justice agencies, which have further established the emerging links between public health and criminology in youth violence prevention. This section begins with an overview of some of the leading evidence-based treatment programs for serious and violent youthful offenders. It then turns to a discussion of strategic innovations in criminal justice.

Greenwood (2006) identified three evidence-based treatment programs for adjudicated delinquents that operate outside of the juvenile justice system (but are often referred through the system): multisystemic therapy (MST), functional family therapy (FFT), and multidimensional

treatment foster care (MTFC). MST combines family and cognitive-behavioral therapies with a range of support services that are tailored to the needs of individual families. Treatment ingredients typically include parent management and communication skills training and work on establishing collaborative home-school links (Henggeler et al., 1998). MST has been evaluated under experimental conditions in more than 25 sites across the United States, Canada, and Western Europe. The weight of the evidence suggests that MST is highly effective in reducing aggression, violent offending, and other antisocial behaviors as well as time in custody compared with usual services (Curtis, Ronan, & Borduin, 2004).

FFT involves modifying patterns of family interaction—by modeling, prompting, and reinforcement—to encourage clear communication of requests and solutions between family members, and to minimize conflict (Alexander & Parsons, 1973). FFT's promise was first demonstrated almost 40 years ago in a randomized trial where adjudicated delinquents, whose families took part in a ten-week course, were significantly less likely to reoffend than their controls (Alexander & Parsons, 1973). Like MST, FFT has since been evaluated in multiple settings and is considered a highly effective treatment for serious and violent juvenile offenders (Greenwood, 2006).

MTFC involves individual-focused therapeutic care (e.g., skill building in problem solving) for the young person in an alternative, noncorrectional environment (foster care) and parent management training (Chamberlain, 2003). Evaluations by its originators at the Oregon Social Learning Center produced positive results in terms of lower rates of self-reported reoffending, including fewer serious and violent crimes, and lower institutional admission rates compared with controls placed in group homes (Chamberlain, 2003).

Tertiary prevention strategies represent a natural avenue for criminal justice agencies to respond to the problem of serious youth violence as well. Indeed, most everything the criminal justice system does – responding to calls for service, making arrests, prosecuting offenders, and incarcerating them – happens *after* rather than *before* a violent event. Unfortunately, criminal justice agencies have been traditionally oriented towards reactively resolving individual crime incidents or processing individual offenders rather than proactively seeking to halt recurring violence problems. Criminal justice agencies have also historically paid little attention to criminological research on violence problems and evaluations of violence prevention strategies. The criminology research community has long engaged in collection and analysis of data on serious youth violence in the same spirit as the epidemiological analyses carried out by public health researchers (Moore et al., 1994). Until recently, however, the close working relationships between practitioners and academics observed in the public health field have not been present in the criminal justice field (Moore, 1995). As an unfortunate result, much of this important criminological research languishes in scientific journals and is never brought to the attention of practitioners who would benefit from the information.

The devastating harms generated by the 1990s youth violence epidemic helped to push criminal justice agencies, especially police departments, towards developing innovative violence prevention strategies (Weisburd & Braga, 2006). Some of the most important evidence-based practices emanating from this unprecedented period of police innovation parallel the basic public health approach to violence prevention. These violence prevention strategies are rooted in problem-oriented policing (Goldstein, 1990) and situational crime prevention (Clarke, 1997) perspectives that encourage officers to identify discrete problems, analyze the underlying conditions and dynamics that cause these problems to recur, implement strategies that are

tailored to address these underlying causes, and to evaluate the impact of implemented strategies. These strategies are also characterized by close working partnerships between academics and practitioners.

Much of the devastating toll of urban gun violence can be linked to dynamics and situations generated by a small number of high-rate young offenders committing shootings at specific places. For instance, in 2006, roughly 1% of Boston youth between the ages of 15 and 24 participated in gangs but violent gang dynamics generated more than half of all homicides and gang members were involved in roughly 70% of fatal and non-fatal shootings as either a perpetrator and/or a victim (Braga, Hureau, & Winship, 2008). Some 5% of Boston's street corners and block faces generated 74% of fatal and non-fatal shootings between 1980 and 2008, with the most-active 65 locations experiencing more than 1,000 shootings during this time period (Braga, Papachristos, & Hureau, 2010). While concerning, these patterns represent important opportunities for more effective tertiary violence prevention. If police departments can organize themselves to control the small number of risky places and risky people that generate the bulk of their violent crime problems, they can more effectively manage citywide violent crime trends. Innovative focused deterrence and hot spots policing strategies take a problem-oriented approach to deal with these identifiable risks.

Pioneered in Boston during the 1990s, focused deterrence strategies are designed to prevent serious youth violence by reaching out directly to gangs, saying explicitly that violence would no longer be tolerated, and backing up that message by "pulling every lever" legally available when violence occurs (Kennedy, 2008; Kennedy, Piehl, & Braga, 1996). The chronic involvement of gang members in a wide variety of offenses make them, and the gangs they form, vulnerable to coordinated criminal justice responses. In concert with focused enforcement

actions, youth workers, probation and parole officers, and churches and other community groups offer gang members services and other kinds of help. These partners also delivered an explicit message that violence was unacceptable to the community and that "street" justifications for violence were mistaken. The anti-violence message is delivered in formal meetings with gang members (known as "forums" or "call-ins"), through individual police and probation contacts with gang members, through meetings with inmates at secure juvenile facilities in the city, and through gang outreach workers. Quasi-experimental evaluations have found focused deterrence approaches to be effective in reducing serious youth violence in several U.S. cities (e.g., Braga et al., 2001; McGarrell et al., 2006).

The ultimate target of these gang interventions is the self-sustaining dynamic of retaliation that characterized many ongoing conflicts (Kennedy, 2008; Kennedy et al., 1996). Focused deterrence "crackdowns" are not designed to eliminate gangs or stop every aspect of gang activity, but to control and deter gang violence. The citywide communication of the anti-violence message, coupled with meaningful examples of the consequences that will be brought to bear on gangs that break the rules, sought to weaken or eliminate the "kill or be killed" norm as individuals recognize that their enemies will be operating under the new rules as well. The social service component of focused deterrence strategies serves as an independent good and also helps to remove excuses used by offenders to explain their offending. Social service providers present an alternative to illegal behavior by offering relevant jobs and social services. The availability of these services invalidates excuses that their violent behavior is the result of a lack of legitimate opportunities for employment, or other problems, in their neighborhood.

Youth violence is also linked to criminogenic dynamics and situations occurring at specific places within cities. In Chicago, street gang homicides have long been concentrated in a

small number of gang turf and drug hot spots (Block & Block, 1993). In a longitudinal analysis of 14 years of juvenile arrest incident data in Seattle, Weisburd, Groff, and Morris (2009) found that one-third of all juvenile arrest incidents were concentrated on less than 1% of the city's street segments. The street segments with the highest juvenile arrest trajectories were characterized by facilities with high-levels of juvenile activity such as schools, youth centers, and shopping malls.

A recent quasi-experimental evaluation of the Boston Police Department's Safe Street Team program found that problem-oriented policing interventions significantly reduced violent crime incidents in targeted hot spots (Braga, Hureau, & Papachristos, in press). Many of the Safe Street Team problem-oriented interventions were designed to address violent crime problems caused by and perpetrated against local youth. For instance, in one violent hot spot, high school youth using public transportation were repeatedly robbed and often assaulted by other local youth when commuting between the train station and their high school. In addition to increasing their presence and making robbery arrests in the area, Safe Street Team officers made the place less attractive to youth robbers by collaborating with public works to fence a vacant lot and trim overgrown bushes and other vegetation that helped conceal robbers from their victims. The officers then collaborated with the local high school to raise awareness among the students that they should be aware of their surroundings and refrain from using smart phones and other items that were attractive to robbers when commuting in the risky area. The officers also sponsored a contest for students to design robbery awareness fliers and posters that used slogans and lingo that would appeal to youth. The fliers were distributed to all high school students and posters were displayed on school grounds, in the train station, and in the windows of stores on the route between the train station and the school.

These interventions are part of a growing body of rigorous scientific evidence that suggests police can reduce violence when they use an array of tactics and focus their efforts on identifiable risks (Weisburd & Eck, 2004). A recently-completed Campbell Collaboration systematic review of 10 quasi-experimental evaluations and one randomized controlled trial of focused deterrence strategies found that these interventions were associated with significant violence reduction effects (Braga & Weisburd, 2012). A recently-updated Campbell Collaboration systematic review of 9 quasi-experimental evaluations and 10 randomized controlled trials reported that hot spots policing interventions produced noteworthy violence reduction gains; it also found that problem-oriented policing strategies to control hot spots generated larger violence reduction effects relative to simply increasing levels of traditional policing activities, such as patrol and arrests, in hot spot areas (Braga, Papachristos, & Hureau, 2011).

Discussion and Conclusions

Historically, public health researchers and practitioners have prevented many deaths and illnesses through the application of its fundamental problem-solving capacity to develop actions such as water quality control, immunization programs, and food inspection regimes (Committee for the Study of the Future of Public Health, 1988). These successes exemplify the possibilities of dealing with very serious problems through an organized effort rooted in scientific knowledge. Public health research and practice does not separate scientific discussions on the nature of problems from discussions of solutions to those problems. As described by Mercy and Hammond (1999), a public health approach to violence prevention is action-oriented and its main

goal is the analysis of scientific evidence in order to improve injury prevention and violence reduction.

The public health approach starts with defining the problem, progresses towards identifying risk factors and causes, developing and implementing interventions, and measuring the effectiveness of these interventions. Public health researchers are careful to note that these steps sometimes do not follow this linear progression, because some may occur simultaneously or problems may need to be reanalyzed and ineffective interventions readjusted (Mercy & Hammond, 1999). They also note that information systems used to define and analyze youth violence problems can also be useful in evaluating the impacts of prevention programs.

Many criminologists will immediately recognize this public health model as a specific application of the basic action research model that has grounded applied social science inquiries for many decades (see, e.g., Lewin, 1947). As we show in this paper, the fields of criminology and public health often overlap and intersect in their examination of the nature of serious youth violence and the development of prevention responses to address it. In contrast to public health researchers, many criminologists have historically invested themselves in fundamental scientific inquiries that seek to test theories of criminality and crime causation rather than pursuing applied science research and development projects. In his well-known account of the role of criminologists in President Johnson's Commission on Crime and the Administration of Justice, James Q. Wilson (1975) observed that the research tradition in criminology, grounded in the sociological perspective, was focused on societal "root causes" of crime and had few implications for the potential effectiveness of available policy interventions.

The emerging link between criminology and public health in preventing serious youth violence is supported by a general rise in crime policy research in the criminology field. Indeed,

one can argue that the emergence of the public health approach is somewhat connected to a more general movement toward evidence-based practice that emerged after the "nothing works" challenges began to recede. Moreover, the sociological perspective described by Wilson (1975) in the 1960s no longer dominates the field of criminology. Over the last 30 years, policy-oriented criminologists of many disciplinary backgrounds have made important scientific contributions to policy debates on crime and justice issues (Cook, 2003).

During this time period, the Academy of Criminal Justice Sciences and the American Society of Criminology have played significant roles in advancing applied research and developing connections with federal institutions to create a much stronger presence in the crime and justice policy world (Clear, 2010). The demand for on-the-ground action research partnerships has also increased as criminal justice practitioners have started to recognize the considerable value added by developing close working relationships with criminologists to address crime and justice problems (Petersilia, 2008).

Federal funding initiatives that support criminal justice practitioner-researcher partnerships could go far in improving our capacity to prevent serious youth violence. Academic researchers can help criminal justice agencies by conducting research on urban violence problems to focus limited prevention resources on high-risk offenders, victims, and places. Academic researchers also bring considerable skill to the evaluation of implemented programs. Success stories, such as the effective focused deterrence and hot spots policing strategies described here, have made academics an important part of new strategic violence prevention initiatives. For instance, the U.S. Department of Justice-sponsored Project Safe Neighborhoods (PSN) initiative provided each of the 94 U.S. Attorney's districts with funds to hire academic research partners to help understand and address serious gun violence problems in local

jurisdictions. A recent national evaluation of PSN found that treatment cities with high levels of implementation, which includes in-depth problem analysis to tailor prevention strategies, were associated with declines in violent crime (McGarrell et al., 2010).

As we look to the future, youth violence prevention policy and practice would clearly benefit from a more sustained collaboration between criminologists and public health researchers on action research projects. One promising development is CDC's Academic Centers for Excellence (ACE) for youth violence prevention. The centers are guided by four main goals: "(1) build the scientific infrastructure necessary to support the development and widespread application of effective youth violence interventions; (2) promote interdisciplinary research strategies to address the problem of youth violence; (3) foster collaboration between academic researchers and communities; and (4) empower communities to address the problem of youth violence" (Vivolo, Matjasko, & Massetti, 2011, p. 142). Notable collaborations between criminologists and public health researchers include the University of Chicago ACE site's study of the implementation of CeaseFire Chicago and Harvard University ACE site's evaluation of the StreetSafe initiative in Boston (Azrael & Hemenway, 2011; Vivolo et al., 2011).

Since 2000, a total of 20 ACE sites have been established across the country. In the most recent iteration of the ACE program (2010-2015), the CDC requires researchers in each funded site to enhance the capacity and infrastructure of the local health department for youth violence prevention work, implement a coordinated set of youth violence prevention strategies in the local community, and evaluate the impact of the comprehensive youth violence prevention strategy on community rates of violence (http://www.cdc.gov/ViolencePrevention/ACE/index.html). Building on the capacities of these ACE collaborations (and others) and drawing upon the growing evidence base of primary, secondary, and tertiary prevention strategies signals a new era

in the prevention of serious youth violence. We may be part way there, and criminology and public health are at center stage.

References

Alexander, J. F., & Parsons, B. V. (1973). Short-term behavioral intervention with delinquent families: Impact on family process and recidivism. *Journal of Abnormal Psychology, 81*, 219-225.

Azrael, D., & Hemenway, D. (2011). Greater than the sum of their parts: The benefits of youth violence prevention centers. *American Journal of Community Psychology*, *48*, 21-30.

Block, C. R., & Block, R. (1993). *Street gang crime in Chicago*. Research in brief series. Washington, DC: National Institute of Justice, U.S. Department of Justice.

Blumstein, A., Cohen, J., Roth, J. A., & Visher, C. A. (Eds.). (1986). *Criminal Careers and 'Career Criminals.'* Washington, DC: National Academy Press.

Blumstein, A., & Wallman, J. (Eds.). (2006). *The crime drop in America*, rev. ed. New York: Cambridge University Press.

Boisjoli, R., Vitaro, F., Lacourse, E., Barker, E. D., & Tremblay, R. E. (2007). Impact and clinical significance of a preventive intervention for disruptive boys: 15 year follow-up. *British Journal of Psychiatry, 191*, 415-419.

Borowsky, I. W., Mozayeny, S., Stuenkel, K., & Ireland, M. (2004). Effects of a primary care-based intervention on violent behavior and injury in children. *Pediatrics, 114*, 392-399.

Braga, A. A., Hureau, D. M., & Papachristos, A. V. (in press). An ex-post-facto evaluation framework for place-based police interventions. *Evaluation Review*.

Braga, A. A., Hureau, D. M., & Winship, C. (2008). Losing faith? Police, black churches, and the resurgence of youth violence in Boston. *Ohio State Journal of Criminal Law*, *6*, 141-172.

Braga, A. A., Kennedy, D. M., Waring, E. J., & Piehl, A. M. (2001). Problem-oriented policing, deterrence, and youth violence: An evaluation of Boston's Operation Ceasefire. *Journal of Research in Crime and Delinquency*, *38*, 195-225.

Braga, A. A., Papachristos, A. V., & Hureau, D. M. (2010). The concentration and stability of gun violence at micro places in Boston, 1980–2008. *Journal of Quantitative Criminology, 26*, 33-53.

Braga, A. A., Papachristos, A. V., & Hureau, D. M. (2011). The effects of hot spots policing on crime. Report to the Campbell Collaboration Crime and Justice Group.

Braga, A. A., & Weisburd, D. (2010). *Policing problem places: Crime hot spots and effective prevention*. New York: Oxford University Press.

Braga, A. A., & Weisburd, D. L. (2012). The effects of focused deterrence strategies on crime: A systematic review and meta-analysis of the empirical evidence. *Journal of Research in Crime and Delinquency*. DOI: 10.1177/0022427811419368.

Center for the Study and Prevention of Violence (2007). *The Incredible Years: Parents, teachers, and children's training series.* Boulder, CO: Center for the Study and Prevention of Violence.

Chamberlain, P. (2003). *Treating chronic juvenile offenders: Advances made through the Oregon multidimensional treatment foster care model*. Washington, DC: American Psychological Association.

Clarke, R. V. (Ed.). (1997). *Situational crime prevention: Successful case studies*, 2nd ed. Albany, NY: Harrow and Heston.

Clear, T. R. (2010). Policy and evidence: The challenge to the American Society of Criminology. *Criminology*, *48*, 1-26.

Cochran, W. (1983). *Planning and analysis of observational studies*. New York: Wiley.

Committee for the Study of the Future of Public Health. (1988). *The future of public health*. Division of Health Care Services, Institute of Medicine. Washington, DC: National Academy Press.

Cook, P. J. (2003). Meeting the demand for expert advice on drug policy. *Criminology & Public Policy*, *2*, 565-570.

Cook, P. J., & Laub, J. H. (2002). After the epidemic: Recent trends in youth violence in the United States. In M. Tonry (Ed.), *Crime and justice: A review of research* (Vol. 29, pp. 1-37). Chicago: University of Chicago Press.

Cook, P. J., & Laub, J. H. (1998). The unprecedented epidemic in youth violence. In M. Tonry & M. H. Moore (Eds.), *Crime and justice: A review of research* (Vol 24, pp. 27-64). Chicago: University of Chicago Press.

Curtis, N. M., Ronan, K. R., & Borduin, C. R. (2004). Multisystemic treatment: A meta-analysis of outcome studies. *Journal of Family Psychology, 18*, 411-419.

Derzon, J. H. (2006). How effective are school-based violence prevention programs in preventing and reducing violence and other antisocial behaviors? A meta-analysis. In S. R. Jimerson & M. J. Furlong (Eds.), *The handbook of school violence and school safety: From research to practice* (pp. 429-441). Mahwah, NJ: Erlbaum.

Dodge, K. A. (2001). The science of youth violence prevention: Progressing from developmental epidemiology to efficacy to effectiveness to public policy. *American Journal of Preventive Medicine*, *20*(1S), 63-70.

Eckenrode, J., Campa, M., Luckey, D. W., Henderson, C. R., Cole, R., Kitzman, H., Anson, E., Sidora-Arcoleo, K., Powers, J., & Olds, D. L. (2010). Long-term effects of prenatal and

infancy nurse home visitation on the life course of youths: 19-year follow-up a randomized trial. *Archives of Pediatrics and Adolescent Medicine*, *164*, 9-15.

Elliott, D. S., & Mihalic, S. F. (2004). Issues in disseminating and replicating effective prevention programs. *Prevention Science*, *5*, 47-52.

Farrell, A. D., & Flannery, D. J. (2006). Youth violence prevention: Are we there yet? *Aggression and Violent Behavior, 11*, 138-150.

Farrington, D. P., & Loeber R. (2000). Epidemiology of youth violence. *Child and Adolescent Psychiatry Clinics of North America, 9*, 733-748.

Farrington, D. P., & Welsh, B. C. (2007). *Saving children from a life of crime: Early risk factors and effective interventions*. New York: Oxford University Press.

Fields, S. A., & McNamara, J. R. (2003). The prevention of child and adolescent violence: A review. *Aggression and Violent Behavior, 8*, 61-91.

Goldstein, H. (1990). *Problem-oriented policing*. Philadelphia, PA: Temple University Press.

Greenwood, P. W. (2006). *Changing lives: Delinquency prevention as crime-control policy*. Chicago: University of Chicago Press.

Hahn, R., Fuqua-Whitley, D., Wethington, H., Lowy, J., Crosby, A., et al. (2007). Effectiveness of universal school-based programs to prevent violent and aggressive behavior: A systematic review. *American Journal of Preventive Medicine*, *33*(2S), 114-129.

Hanlon, T. E., Bateman, R. W., Simon, B. D., O'Grady, K. E., & Carswell, S. B. (2002). An early community-based intervention for the prevention of substance abuse and other delinquent behavior. *Journal of Youth and Adolescence, 31*, 459-471.

Hawkins, J. D., von Cleve, E., & Catalano, R. F. (1991). Reducing early childhood aggression: Results of a primary prevention program. *Journal of the American Academy of Child and Adolescent Psychiatry*, *30*, 208-217.

Hawkins, J. D., Arthur, M. W., & Catalano, R. F. (1995). Preventing substance abuse. In M. Tonry & D. P. Farrington (Eds.), *Crime and justice: A review of research* (Vol. 19, pp. 343-427). Chicago: University of Chicago Press.

Hawkins, J. D., Catalano, R. F., & Arthur, M. W. (2002). Promoting science-based prevention in communities. *Addictive Behaviors, 27*, 951-976.

Hawkins, J. D., Catalano, R. F., Kosterman, R., Abbott, R., & Hill, K. G. (1999). Preventing adolescent health-risk behaviors by strengthening protection during childhood. *Archives of Pediatrics and Adolescent Medicine, 153*, 226-234.

Hawkins, J. D., Smith, B. H., Hill, K. G., Kosterman, R., & Catalano, R. F. (2007). Promoting social development and preventing health and behavior problems during the elementary grades: Results from the Seattle Social Development Project. *Victims and Offenders, 2*, 161-181.

Hawkins, J. D., Kosterman, R., Catalano, R. F., Hill, K. G., & Abbott, R. D. (2008). Effects of social development intervention in childhood 15 years later. *Archives of Pediatrics and Adolescent Medicine*, *162*, 1133-1141.

Hawkins, J. D., Oesterle, S., Brown, E. C., Arthur, M. W., Abbott, R. D., Fagan, A. A., & Catalano, R. F. (2009). Results of a type 2 translational research trial to prevent adolescent drug use and delinquency: A test of Communities That Care. *Archives of Pediatrics and Adolescent Medicine, 163*, 789-798.

Henggeler, S. W., Schoenwald, S. K., Borduin, C. M., Rowland, M. D., & Cunningham, P. B. (1998). *Multisystemic treatment of antisocial behavior in children and adolescents*. New York: Guilford Press.

Kaplan, R. M. (2000). Two pathways to prevention. *American Psychologist, 55*, 382-396.

Kennedy, D. M. (2008). *Deterrence and crime prevention*. London: Routledge.

Kennedy, D. M., Piehl, A. M., & Braga, A. A. (1996). Youth violence in Boston: Gun markets, serious youth offenders, and a use-reduction strategy. *Law and Contemporary Problems*, *59*, 147-196.

Kerani, R. P., Handcock, M. S., Handsfield, H. H., & Holmes, K. K. (2005). Comparative geographic concentrations of 4 sexually transmitted infections. *American Journal of Public Health, 95*, 324-330.

Kling, J. R., Ludwig, J., & Katz, L. F. (2005). Neighborhood effects on crime for female and male youth: Evidence from a randomized housing voucher experiment. *Quarterly Journal of Economics*, *120*, 87–130.

LeBlanc, M. (1998). Screening of serious/violent juvenile offenders. In R. Loeber & D. P. Farrington (Eds.), *Serious and violent juvenile offenders: Risk factors and successful interventions* (pp. 167-196). Thousand Oaks, CA: Sage.

Lewin, K. (1947). Group decisions and social change. In T. Newcomb & E. Hartley (Eds.), *Readings in social psychology* (pp. 340-344). New York: Atherton Press.

Limbos, M. A., Chan, L. S.., Warf, C., Schneir, A., Iverson, E., Shekelle, P., & Kipke, M. D. (2007). Effectiveness of interventions to prevent youth violence: A systematic review. *American Journal of Preventive Medicine*, *33*, 65-74.

Lipsey, M. W. (2009). The primary factors that characterize effective interventions with juvenile offenders: A meta-analytic overview. *Victims and Offenders*, *4*, 124-147.

Ludwig, J. (2012). Cost-effective crime prevention. In R. Rosenfeld, K. Quinet, & C. Garcia (Eds.), *Contemporary issues in criminological theory and research: The role of social institutions* (pp. 29-39). Belmont, CA: Cengage.

Ludwig, J., Duncan, G., & Hirschfield, P. (2001). Urban poverty and juvenile crime: Evidence from a randomized housing-mobility experiment. *Quarterly Journal of Economics, 96*, 655-679.

Maxfield, M. G., & Widom, C. S. (1996). The cycle of violence revisited 6 years later. *Archives of Pediatrics and Adolescent Medicine*, *150*, 390-395.

MacDonald, J. M., Bluthenthal, R. N., Golinelli, D., Kofner, A., Stokes, R. J., Sehgal, A., Fain, T., & Beletsky, L. (2009). *Neighborhood effects on crime and youth violence: The role of Business Improvement Districts in Los Angeles*. Santa Monica, CA: RAND.

McGarrell, E., Chermak, S., Wilson, J., & Corsaro, N. (2006). Reducing homicide through a "lever-pulling" strategy. *Justice Quarterly*, *23*, 214-231.

McGarrell, E., Corsaro, N., Hipple, N., & Bynum, T. (2010). Project Safe Neighborhoods and violent crime trends in U.S. cities: Assessing violent crime impact. *Journal of Quantitative Criminology*, *26*, 165-190.

Mercy, J. A., & Hammond, W. R. (1999). Combining action and analysis to prevent homicide: A public health perspective. In M. D. Smith & M. A. Zahn (Eds.), *Homicide: A sourcebook of social research* (pp. 297-310). Thousand Oaks, CA: Sage.

Mercy, J. A, Rosenberg, M. L., Powell, K. E., Broome, C. V., & Roper, W. L. (1993). Public health policy for preventing violence. *Health Affairs, 12*, 7-29.

Molina, I. A., Dulmus, C. N., & Sowers, K. (2005). Secondary prevention for youth violence: A review of selected school-based programs. *Brief Treatment and Crisis Intervention*, *5*, 95-127.

Moore, E., Armsden, G., & Gogerty, P. L. (1998) A twelve-year follow-up study of maltreated and at-risk children who received early therapeutic child care. *Child Maltreatment, 3*, 3-16.

Moore, M. H. (1995). Public health and criminal justice approaches to prevention. In M. Tonry & D. P. Farrington (Eds.), *Crime and justice: A review of research* (Vol. 19, pp. 237-262). Chicago: University of Chicago Press.

Moore, M. H., Prothrow-Smith, D., Guyer, B., & Spivak, H. (1994). Violence and intentional injuries: criminal justice and public health perspectives on an urgent national problem. In A. J. Reiss & J. A. Roth (Eds.), *Understanding and preventing violence* (Vol. 4, pp. 167-216). Washington, DC: National Academy Press.

Morenoff, J., Sampson, R. J., & Raudenbush, S. (2001). Neighborhood inequality, collective efficacy, and the spatial dynamics of urban violence. *Criminology, 39*, 517-559.

Olds, D. L., Henderson, C. R., Chamberlin, R., & Tatelbaum, R. (1986). Preventing child abuse and neglect: A randomized trial of nurse home visitation. *Pediatrics*, *78*, 65-78.

Olds, D. L., Henderson, C. R., Cole, R., Eckenrode, J., Kitzman, H., Luckey, D., Pettitt, L. M., Sidora, K., Morris, P., & Powers, J. (1998). Long-term effects of nurse home visitation on children's criminal and antisocial behavior: 15-year follow-up of a randomized controlled trial. *Journal of the American Medical Association, 280*, 1238-1244.

Olds, D. L., Sadler, L., & Kitzman, H. (2007). Programs for parents of infants and toddlers: Recent evidence from randomized trials. *Journal of Child Psychology and Psychiatry*, *48*, 355-391.

Papachristos, A. V. (2010). Murder by structure: Dominance relations and the social structure of gang homicide. *American Journal of Sociology*, *115*, 74-128.

Perry, C. L., Klepp, K.-I., & Sillers, C. (1989). Community-wide strategies for cardiovascular health: The Minnesota Health Program Youth Program. *Health Education Research, 4*, 87-101.

Petersilia, J. (2008). Influencing public policy: An embedded criminologist reflects on California prison reform. *Journal of Experimental Criminology*, *4*, 335-356.

Poundstone, K. E., Strathdee, S. A., & Celentano, D. D. (2004). The social epidemiology of Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome. *Epidemiologic Reviews, 26,* 22-35.

Reynolds, A. J., Temple, J. A., Ou, S. R., Arteaga, I. A., & White, B. (2011). School-based early childhood education and age-28 well-being: Effects by timing dosage and subgroups. *Science, 333*, 360-364.

Reynolds, A. J., Temple, J.A., Robertson, D.L., & Mann, E.A. (2001). Long-term effects of an early childhood intervention on educational achievement and juvenile arrest. *Journal of the American Medical Association, 285,* 2339-2346.

Rose, G. (2001). Sick individuals and sick populations. *International Journal of Epidemiology, 30,* 427-432.

Rosenbaum, P. (1995). *Observational studies.* New York: Springer.

Rothman, K. J., & Greenland, S. (2005). Causation and causal inference in epidemiology. *American Journal of Public Health*, *95*, S144–S150.

Schwalbe, C. S. (2008). A meta-analysis of juvenile justice risk assessment instruments: Predictive validity by gender. *Criminal Justice & Behavior*, *35*, 1367-1381.

Shepherd, J. P., & Farrington, D. P. (1993). Assault as a public health problem. *Journal of the Royal Society of Medicine, 86*, 89-94.

Tremblay, R. E., Pagani-Kurtz, L., Mâsse, L. C., Vitaro, F., & Pihl, R. O. (1995). A bimodal preventive intervention for disruptive kindergarten boys: Its impact through mid-adolescence. *Journal of Consulting and Clinical Psychology, 63,* 560-568.

Tremblay, R. E., Vitaro, F., Bertrand, L., LeBlanc, M., Beauchesne, H., Boileau, H., & David, L. (1992). Parent and child training to prevent early onset of delinquency: The Montréal Longitudinal-Experimental Study. In J. McCord & R. E. Tremblay (Eds.), *Preventing antisocial behavior* (pp. 117-138). New York: Guilford.

U.S. Department of Health and Human Services (2001). *Youth violence: A report of the Surgeon General*. Rockville, MD: Author.

Vivolo, A., Matjasko, J., & Massetti, G. (2011). Mobilizing communities and building capacity for youth violence prevention. *American Journal of Community Psychology*, *48*, 141-145.

Webster-Stratton, C., & Hammond, M. (1997). Treating children with early-onset conduct problems: A comparison of child and parent training interventions. *Journal of Consulting and Clinical Psychology, 65*, 93-109.

Webster-Stratton, C., Hollinsworth, T., & Kolpacoff, M. (1989). The long-term effectiveness and clinical significance of three cost-effective training programs for families with conduct-problem children. *Journal of Consulting and Clinical Psychology*, *57*, 550-553.

Weisburd, D., & Braga, A. A. (Eds.). (2006). *Police innovation: Contrasting perspectives*. New York: Cambridge University Press.

Weisburd, D. L., & Eck, J. E. (2004). What can the police do to reduce crime, disorder, and fear? *Annals of the American Academy of Political and Social Science*, *593*, 42-65.

Weisburd, D. L., Groff, E., & Morris, N. (2009). Hot spots of juvenile crime: A longitudinal study of arrest incidents at street segments in Seattle, Washington. *Journal of Quantitative Criminology*, *25*, 443-467.

Welsh, B. C., & Farrington, D. P. (2011). Evidence-based crime policy. In M. Tonry (Ed.), *The Oxford handbook of crime and criminal justice* (pp. 60-92). New York: Oxford University Press.

Welsh, B. C., Sullivan, C. J., & Olds, D. L. (2010). When early crime prevention goes to scale: A new look at the evidence. *Prevention Science, 11*, 115-125.

Wilson, J. Q. (1975). *Thinking about crime*. New York: Basic Books.

Wilson, S. J., & Lipsey, M. W. (2007). School-based interventions for aggressive and disruptive behavior: Update of a meta-analysis. *American Journal of Preventive Medicine*, *33*(2S), 130-143.

Wintemute, G. J., & Braga, A. A. (2011). Opportunities for state-level action to reduce firearm violence: Proceeding from the evidence. *American Journal of Public Health*, *101*, e1-e3.

Wintemute, G. J., Braga, A. A., & Kennedy, D. M. (2010). Private-party gun sales, regulation, and public safety. *The New England Journal of Medicine*, *363*, 508-513.

Wolfgang, M., Figlio, R., & Sellin, T. (1972). *Delinquency in a birth cohort*. Chicago: University of Chicago.

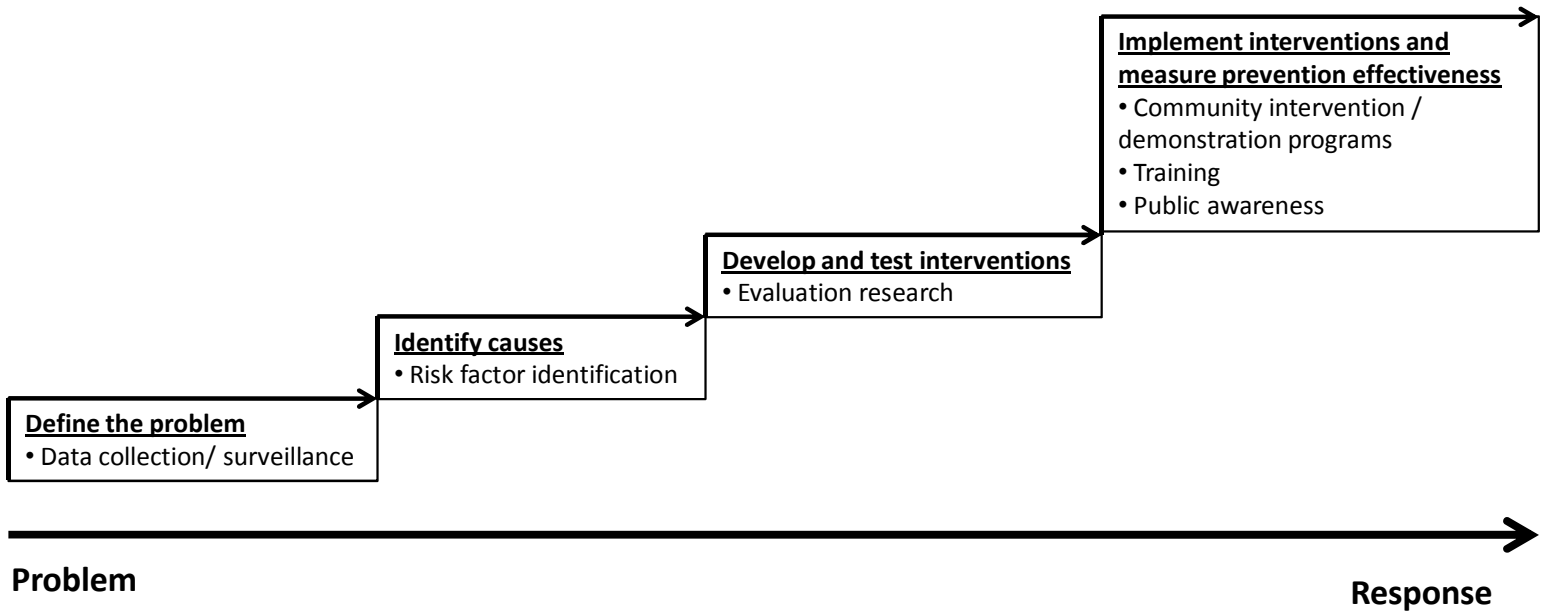

Figure 1. Public Health Model as a Scientific Approach to Prevention

Source: Mercy et al. (1993)

Response to Reviewers' Comments

Thank you again for the opportunity to respond to the reviewers' comments on our paper. There were a number of excellent suggested changes, and we incorporated them into our paper. This letter outlines the changes we made with reference to the page numbers in the revised manuscript.

Reviewer #1

Point 1: Building on our original discussion of one important feature of how public health is viewed in the wider context of traditional academic criminology (as the reviewer acknowledged; now on pp. 27-28), we have slightly expanded upon this discussion throughout the paper (see e.g., pp. 27-28). The centrality of evidence-based practice is a general theme of our paper and is one that is introduced in the background section and is now—thanks to reviewer #2's comments (see our responses below)—even more prominent in the sections on primary, secondary, and tertiary prevention.

Point 2 (divided into 4 parts):

First part: "The paper would benefit from more detailed/explicit examples of non-criminology public health research/practice. At a couple places in the paper, the authors use citations to presumably compare approaches to violence and other public health issues (see p.7, lines 8-18). Since most who read JQ do not have knowledge of public health research/practice, (and won't bother to track down the cites) using a non-violence public health example would improve the paper."

We appreciate the reviewer's suggestion with respect to being more detailed regarding the comparisons we are drawing. We now try to elaborate on the parallels between violence-related and other public health situations wherever possible. For example, in response to the reviewer's specific point here regarding the material on p. 7, we identify an example that ties together the points made with respect to geographic and network-based inquiries and responses to violence problems.

Second part: "Is there an analogy between AIDS (or some other public health issue) that is comparable to what was done with the focused deterrence policing (or some other public health style intervention)?"

The analogy between focused deterrence strategies and public health intervention lies in addressing high-risk behaviors in social networks of very risky individuals. In the revised version of the paper, we make an implicit link in the background section by noting that AIDS researchers generate similar insights on the "social epidemiology" of the spread of AIDS in high-risk social networks (see pp. 7-8). We feel this addition adds a public health framing to the tertiary intervention material that comes later in the manuscript.

Third part: "As another example, on p. 4 the authors compare violence to disease or other problem behaviors (concentration in subgroups). A non-crime analogy would be useful there."

Again, we appreciate the reviewer calling our attention to this as it offers an opportunity to better explicate some of the connections that we are trying to make in the paper. In this particular case, we added some material from epidemiologist Geoffrey Rose (2001) that considers this "concentration" issue in a way that has implications for both the study of health and violence (see pp. 4-5).

Fourth part: "Similarly, on p.6, the authors note that collaboration with public health researchers and criminologists yielded "critical insights" into the illicit gun market. How exactly did public health contribute? The "iron pipeline" example sounds like other criminological research—what did the public health collaboration uniquely contribute? I should be clear that I don't doubt that public health researchers contributed key insights—but it would be nice if those insights were made more explicit in the article."

The reviewer raises a good point that we believe is sufficiently addressed in the manuscript. Public health researchers and criminologists were similarly concerned with the great harm generated by criminal and juvenile access to firearms. As such, the two camps collaborated on a series of action research projects to understand the sources of illegal guns. They jointly developed research plans, collected data, completed analyses of these data, and came to conclusions. While there were some different orientations in locating responses (e.g., criminologists tended to focus on disrupting pipelines of guns to criminals on the street, public health researcher tended to focused on increasing regulations of firearms commerce), unraveling these differences even further would seem like splitting hairs to most readers of a broader account of the emerging links between the two fields.

Reviewer #2

"On page 9, lines 8-13 - the authors need to add in citations for statements about the risk factors that influence early offending."

A citation has been added that reports on these risk factors (see p. 9).

"From page 9 to page 23 the authors do an exceptional job of describing examples of primary, secondary, and tertiary prevention programs."

"However, I wonder if some of the examples provided are the best fit for each of the sections. With a "greater emphasis on evidence-based decisions-making" (author's words on page 4, line 18) I am curious why the author chose to describe several programs with little to no evidence backing their effectiveness."

We deal with this more general comment by addressing the reviewer's specific comments on primary, secondary, and tertiary prevention, which are as follows:

Primary prevention: The reviewer made 2 excellent suggestions for this section. The first one drew attention to the need for our paper to more firmly adhere to our focus on evidence-based programs: "describe programs with evidence," with a specific focus on school-based programs. Our revised paper now includes a brief discussion of the results of one of the meta-analyses suggested by the reviewer, and the other one is cited (see p. 11). This proved crucial as a way to introduce the Seattle Social Development Project (see pp. 12-13). Mindful of the reviewer's suggestion and the need to keep the paper to a reasonable length, almost a full page of text was deleted. We also deleted 4 references.

The reviewer's second suggestion for the primary prevention section was to "consider adding in a description of the 'operating system' approach to preventing violence." As the reviewer notes, one of the best known and tested operating systems designed to prevent violence is Communities That Care (CTC). Our revised paper now devotes a full page to CTC, by describing its public health-criminological links and reporting on the latest evaluation of its effects on violence and other problem behaviors (see pp. 13-14).

Secondary prevention: For this section the reviewer suggested that we "consider information about the Business Improvement Districts (BIDs) work." We are in agreement that it is a good fit in this section. In our revised paper we have added a new paragraph to report on the BID intervention's effects on violent crime (see p. 19).

Tertiary prevention: The reviewer suggested that, in addition to the work that is profiled, we "should also mention somewhere in the section that we know what works to prevent recidivism and outcomes of that sort with the programs I mentioned above." The aforementioned programs are "MST, FFT, and MTFC." Our initial effort to briefly draw attention to this body of research, which included citing Lipsey (2009) and referring to FFT (see p. 20), has now been greatly expanded with the reviewer's insightful suggestion. Our revised paper now includes more than a full page devoted to the coverage of MST, FFT, and MTFC (see pp. 20-21).

Under the heading "Review of conclusions," and with respect to our coverage of CDC's ACE program, the reviewer states, "A great addition would be to expand this section to describe the current program efforts in the prevention of youth violence."

We are very pleased that the reviewer pointed out that our material on ACE was a little outdated. In the revised version of the conclusion, we note the new directions taken by the ACE initiative and include the website address for interested readers to view (see pp. 29-30). We agree that this makes a stronger "segue" to our ultimate conclusion.