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National Institute of Justice

Research in Brief

February 1994

Understanding and Preventing Violence

by Jeffrey A. Roth

The National Academy of Sciences Panel on the Understanding and Control of Violent Behavior was established to review existing knowledge about violence, with a view toward controlling it in the United States. The panel, set up at the request of three Federal agencies—the National Institute of Justice, the National Science Foundation, and the Centers for Disease Control and Prevention—reached the following fundamental conclusions:

- While present murder and other violent crime rates per capita are not unprecedented for the United States in this cen-

tury, they are among the highest in the industrialized world.

- While sentencing for violent crimes grew substantially harsher between 1975 and 1989, the number of violent crimes failed to decrease. This happened apparently because the violence prevented by longer and more common prison sentences was offset by increases due to other factors and suggests a need for greater emphasis on preventing violent events before they occur.

- Although findings of research and program evaluations suggest promising directions for violence prevention strategies,

developing effective prevention tactics will require long-term collaborations between criminal justice and juvenile justice practitioners, other social service agencies, and evaluation researchers.

- More research and better measurement are needed to identify the causes of violence and opportunities for preventing it—in situations where violence occurs, in communities, and in psychosocial and biological facets of individual human behavior.

This Research in Brief more fully explains these conclusions and their implications.

Issues and Findings

Discussed in the Research in Brief:

The findings of the National Academy of Sciences Panel on the Understanding and Control of Violent Behavior, established to review the current status of research in violence.

Key issues: The extent and nature of violence in this country; promising opportunities for prevention; and areas in which further research and better measures are needed, particularly to identify causes and additional opportunities for prevention.

Key findings:

- ♦ The level of violent crime in this country has reached high, though not unprecedented levels.

- ♦ Between 1975 and 1989, harsher prison sentencing prevented some violent crimes through incapacitation and deterrence, but crimes by persons still in

the community offset those preventive effects.

- ♦ In addition to an effective criminal justice response, the strategy for violence reduction should include preventive interventions directed at the multiple factors affecting the risk of violence.

- ♦ Recognizing the full range of risk factors expands the list of promising, though often untested, opportunities for violence prevention.

- ♦ Long-term prevention should include strategies directed toward children and their caregivers; interventions undertaken at the social and community level; and biomedical strategies in such areas as substance abuse by pregnant women. More immediate effects may be obtainable by intervening in situations where violent events cluster, such as illegal drug markets, certain places where alcohol and firearms are readily available,

and physical locations conducive to crime.

- ♦ Because evaluations are not yet conclusive enough to warrant a commitment to any single strategy, violence control policy should proceed through a problem-solving strategy in which many tactics are tested, evaluated, and refined. This approach requires sustained, integrated efforts by criminal justice, social service, and community-based organizations.

- ♦ The knowledge base needs to be increased by developing better systems to measure violence, expanding research support in certain neglected areas, and through long-term study of the factors that give rise to violent behavior.

Target audience: Law enforcement officials (including prosecutors and judges), community leaders, health workers, school and other public officials, and researchers.

Panel on the Understanding and Control of Violent Behavior

Violence is universally recognized as a pervasive part of contemporary American society and of our Nation's past as well. Many of the attempts to understand the phenomenon have been made in response to specific situations, such as the lawlessness of the Prohibition era, the assassination of President John F. Kennedy, and the urban riots of the mid-1960's. Other attempts at understanding violence singled out particular causes for analysis. In none of these studies, however, was the full body of research on violence reviewed comprehensively, and none of them took an interdisciplinary scientific approach.

The Panel on the Understanding and Control of Violent Behavior was set up to meet the need for a more comprehensive assessment of what is known about violent behavior. It was established in response to a request made by three Federal agencies: the National Science Foundation (NSF), the National Institute of Justice (NIJ), and the Centers for Disease Control and Prevention (CDC). NSF asked for a review of current knowledge about the causes of violent behavior and recommendations for future research. The other two agencies shared these goals, but their areas of interest reflected their particular missions. As the research arm of the U.S.

Department of Justice, NIJ wanted to find out about means to prevent and control violent crime. The CDC wanted assistance in setting priorities for preventing injuries and deaths caused by violence.

Created in 1989, the panel reviewed research on interpersonal violence—events involving at most a few perpetrators and victims. This limitation excluded suicide and self-mutilation as well as large-scale collective and State violence. The focus was on describing, understanding, and controlling violence in the United States. Research in biomedical, psychological, and social sciences was reviewed. The work of the panel was intended both to help guide future research and evaluation projects aimed at prevention and control and to suggest strategic directions for violence control policy.

The findings, conclusions, and recommendations of the panel were published in Volume 1 of *Understanding and Preventing Violence*, published by the National Academy Press. Three volumes of background papers commissioned by the panel are forthcoming. The panel concluded that numerous, often interacting factors, give rise to violent events. Although the underlying

interactions are not well understood, attention to these factors suggests many promising preventive interventions. Testing and evaluating these interventions creates opportunities to prevent particular types of violence while gaining better understanding of them. The panel made recommendations in a number of areas, among them development of problem-solving initiatives to control and understand violence, better statistical systems for measuring violence, and a program of research to identify underlying causes. This Research in Brief is one of a series that summarizes the panel's findings.

NIJ is committed to implementing the recommendations of the panel. Its commitment has begun through support for the Program on Human Development and Criminal Behavior, a longitudinal, multicommunity research project that is exploring the factors associated with violence. In addition, the panel's recommendations have helped shape the goals of NIJ research and evaluation activities and its long-range plans for research.

Copies of *Understanding and Preventing Violence* are available from the National Academy Press, 2101 Constitution Avenue N.W., Washington, DC 20418 (800-624-6242).

Patterns and trends in violence

Violence is a serious social problem. In 1990, 23,438 Americans were murdered—a rate of 9.4 for every 100,000 people. In the latest years for which comparative data are available, this rate was nearly double that of Spain, which had the second highest rate in the industrialized world. The murder rate in the United States in 1988 was four times that of Canada.

Violent crime short of murder is also a frequent occurrence in this country. An estimated 2.9 million serious nonfatal violent victimizations—rapes, personal robberies, and aggravated assaults—occurred in 1990, according to the National Crime Victimization Survey (NCVS). The rates per

100,000 population for these crimes were also among the world's highest. In addition, the NCVS reported more than 3.1 million simple assaults—less serious crimes that neither involved a weapon nor injured the victim. National reporting systems do not include many other violent acts, especially those committed in families, between friends and intimates, by caregivers, by law enforcement officers, in prisons, and in schools. And no statistics fully capture the devastating effects of violence on local communities—their economies, neighborhoods, and quality of life.

Violence falls most heavily on ethnic minority males and occurs most often in urban areas. The lifetime risk of being murdered is about 42 per 1,000 for black males and 18 per 1,000 for Native Ameri-

can males. By contrast, it is only 6 per 1,000 for white males and 3 per 1,000 for white females. Except for forcible rape, serious violent crime reported through the FBI's Uniform Crime Reporting Program is highest in our largest cities. The violent crime rate is 2,243 per 100,000 population in cities with populations greater than 1 million. This is three times the rate for the country as a whole. Since 1980, however, serious violent crime rates in the third population tier (cities between 250,000 and 499,999) have exceeded those in the second tier (cities between 500,000 and 999,999).

Violence in America today is not unprecedented. Nor, despite the statistics above and some news media portrayals, is it limited predominantly to young men, or com-

mon in all areas of large cities, or primarily a matter of attacks by strangers, as the following panel findings attest:

- Murder rates have been as high as they are now twice before in this century—around 1931–34 and again in 1979–81. Because the U.S. population today is higher than ever, however, these per capita rates are producing unprecedented numbers of deaths.
- The 1990 count of serious violent crimes (2.9 million) is at about its 1975 level, following a peak around 1980, a decrease during the early 1980's, and an increase that began in 1986.
- Blacks' murder victimization rates have generally exceeded those of whites throughout this century. However, the trends for the two races do not always move together over time. Between 1970

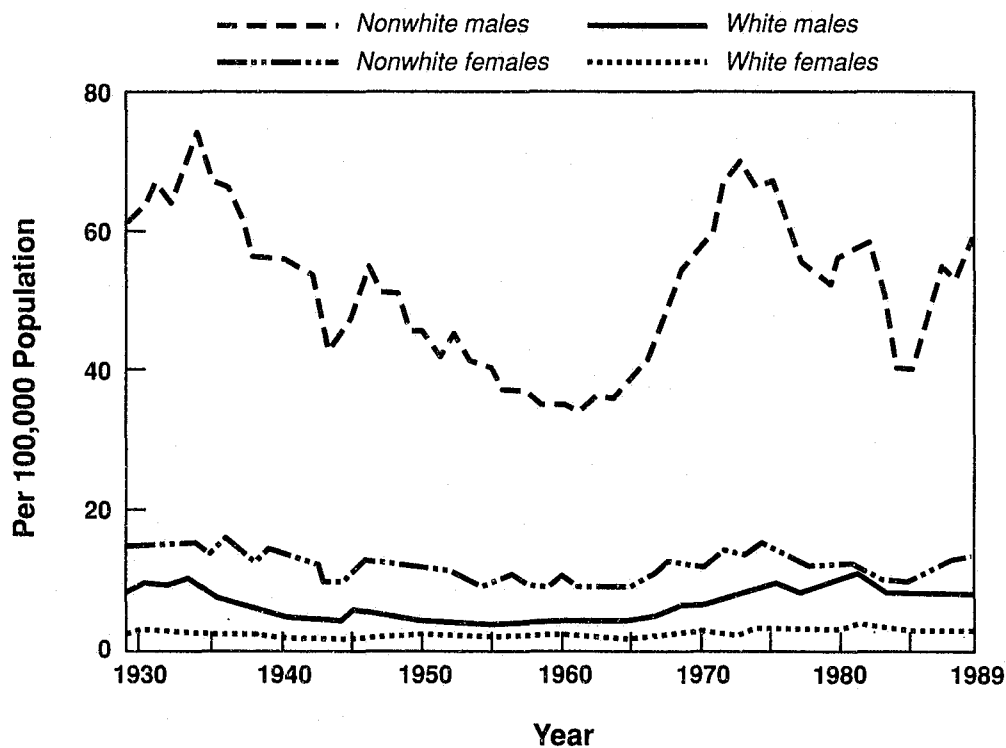
and 1980, for example, the rate at which white males became murder victims rose from 7.3 to 10.9 per 100,000 population, while the rate for black males fell from 82.1 to 71.9. (See exhibit 1.)

- The black/white difference in murder victimization rates appears primarily to reflect conditions in low-income neighborhoods and tends to disappear altogether in high-income neighborhoods (according to the four available studies of this topic).
- Although teenagers and young adults are more likely than older adults to be murdered in any given year, three-fourths of all murder victims are killed after age 24, regardless of ethnicity. Minority murder rates are higher than white rates at all ages.
- Not all types of violent victimization rates move together over time. After 1973, aggravated assault and rape increased

fairly steadily in cities of all sizes, but murder increases were greatest in large cities, and robbery rose during some periods and fell during others.

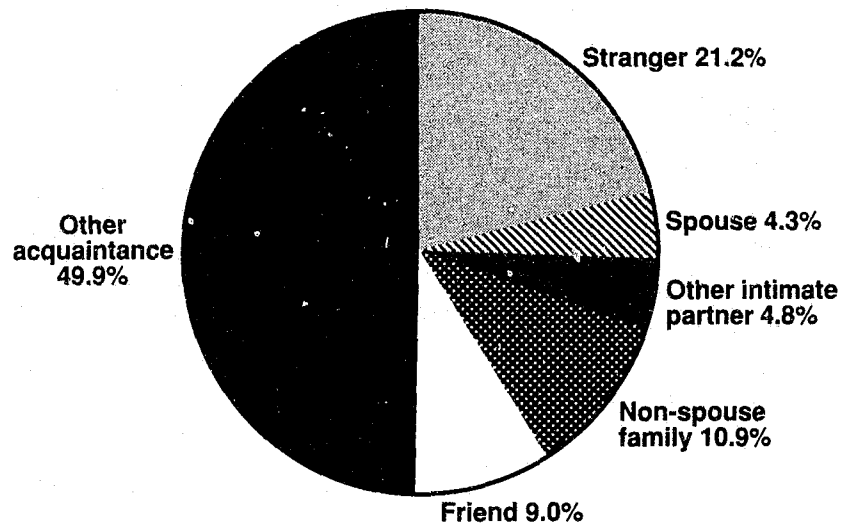
- Variations in violent crime rates by neighborhood in large cities are comparable to the variations in rates between large and small cities, and only a small percentage of all street addresses may account for a substantial share of a city's violent crimes.
- In nearly 40 percent of all murders, the relationship between victims and their killers is unknown to police at the time the statistics are reported. Among the remaining murders, strangers account for only 2 of every 10, while intimate partners or family members account for 3 of every 10, and other acquaintances for 5 of every 10.
- Women face only about one-third the murder risk faced by men. However,

Exhibit 1. Homicide Victims, 1930–1989



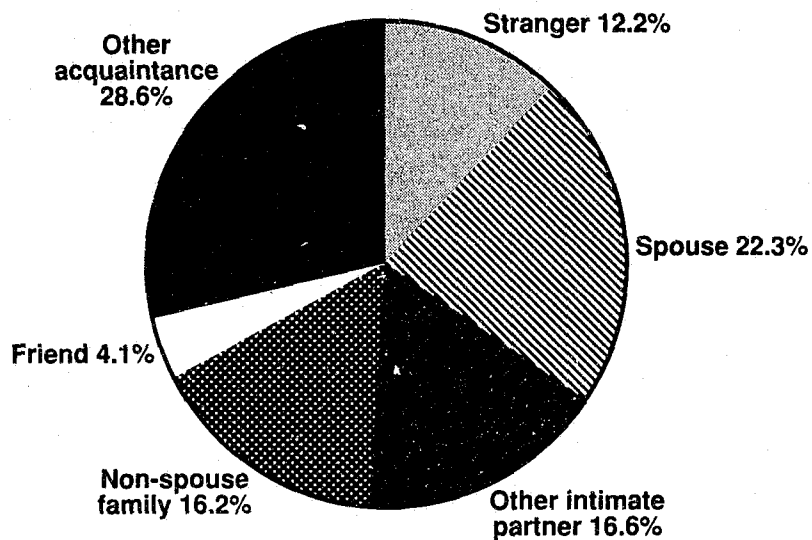
Source: Adapted from Reiss, Albert J., Jr., and Jeffrey A. Roth, eds., *Understanding and Preventing Violence*, Washington, D.C.: National Academy Press, 1993, p. 51.

Exhibit 2. Homicide Distributions by Victim Relationship to Offender for Male Victims, 1987. Includes only murders with known victim-offender relationships.



Source: Adapted from Reiss, Albert J., Jr., and Jeffrey A. Roth, eds., *Understanding and Preventing Violence*, Washington, D.C.: National Academy Press, 1993, p. 80.

Exhibit 3. Homicide Distributions by Victim Relationship to Offender for Female Victims, 1987. Includes only murders with known victim-offender relationships.



Source: Adapted from Reiss, Albert J., Jr., and Jeffrey A. Roth, eds., *Understanding and Preventing Violence*, Washington, D.C.: National Academy Press, 1993, p. 80.

Jason's and His Father's Story

Dave, Evelyn, and their 10-month-old son Jason were struggling. Jason was born just a few weeks after Evelyn's 20th birthday and 4 months before Dave was laid off from his job as a day laborer.

Things had clearly gone wrong since the layoff. Dave had become moody. They argued more frequently, mostly about money. During several of the arguments, Dave had slapped Evelyn, but begged forgiveness each time and promised never to hit her again. Worst of all, Dave seemed to have begun resenting Jason. He had never quite mastered feeding and changing and had stopped trying to learn. He had almost stopped playing with the baby, and what playing he did struck Evelyn as too rough.

Evelyn finally figured out a solution: she'd get back her old job as a waitress. Even though she would miss being away from Jason, they needed the money. Less financial pressure might relieve the psychological pressures that, she believed, were making Dave more abusive.

Dave didn't fight her idea, but Evelyn had mixed feelings about leaving Jason in his care. He was no model babysitter, but perhaps time alone together would build his bonds with Jason and take his attention off his joblessness. Anyway, there was no choice. She knew none of their neighbors, especially none whom she would trust with Jason, and the local day-care center had a 3-month waiting list.

As Evelyn left for her first day at work, Dave "hit bottom." All the humiliation—over the layoff, the rejections, loans from Evelyn's parents, and his new status as babysitter—descended at once. He heard Jason's bawling as yet another insult, not a cry for mother. Whatever Jason's problem was, Dave couldn't fix it. The more he tried, the louder the bawling, and the deeper his own despair and frustration.

Dave's self-control finally broke when Jason wet him. He turned on the "hot" tap, filled the bathtub with scalding water, and held Jason in the tub by his arm and leg. Jason's crying eventually stopped, but not until third-degree burns covered 35 percent of his body, according to the medical examiner's report.

among murder victims, women are more than four times as likely as men to have been killed by spouses or other intimate partners. Male victims are nearly twice as likely as female victims to be killed by friends, acquaintances, or strangers. (See exhibits 2 and 3 on page 4.)

The need for prevention

Usually the criminal justice system responds *after* a violent event occurs. The event must be reported to, or observed by, the police. Then an arrest may be made, the arrestee convicted, and the offender punished. Between 1975 and 1989, the probability of clearing a violent crime by arrest remained roughly constant. However, sentencing policy became much harsher. Increases in both a convicted violent offender's chance of being imprisoned and the average prison time served if imprisoned at all combined to cause a near tripling of the expected prison time served per violent crime.

The criminal justice system's increased use of prison reduced violent crime levels in two ways. First, it prevented 10 to 15 per-

cent of potential violent crimes through incapacitation—the isolation that prevents prisoners from committing crimes in the community.* Second, it prevented additional violent crimes through deterrence, by discouraging people in the community from committing them.

There is no reliable means of estimating the size of the deterrence effect and the total number of violent crimes the harsher sentencing policy averted. Whatever the number, however, those potential crimes must have been "replaced" by others, because the actual number of serious violent crimes was about the same in 1989 as in 1975—2.9 million. This suggests that by itself the criminal justice response to violence could accomplish no more than running in place. An effective control strategy must also include preventing violent events before they happen.

Risk factors and violence prevention

Every violent event is a chance occurrence, in the sense that no human characteristic,

set of circumstances, or chain of events makes violence inevitable. It seems reasonable to assume that some intervention might have prevented each violent event, but the correct intervention cannot be known in advance for every individual case. As starting points for exploring prevention, there are well-documented risk factors, which increase the odds that violence will occur. Some risk factors can be modified to reduce those odds. There is always a chance, however, that violence will occur in a low-risk setting or fail to occur in a very high-risk setting.

As shown in exhibit 4 (page 7), risk factors for violence can be classified in a framework that has two dimensions. The first is temporal proximity—how close in time the factor is to the violent event. Furthest removed in time are predisposing risk factors, which increase the probability of violent events months or even years ahead. Situational risk factors are circumstances that surround an encounter between people and that increase either the chance that violence will occur or the harm that will take place if it does. Activating events are those that immediately lead to a violent act.

** These figures are based on an analysis prepared for the panel.*

Andy's and Bob's Story

Wrightstown had long been known as a tough blue-collar suburb. Residents rarely ventured downtown, with its open-air drug markets and drive-by shootings. Still "men were men," and their reputations depended on toughness, sexual and beer-drinking prowess, and family honor. Big Sunday-afternoon beer parties were a local ritual, and everyone knew that some of the biggest and wildest happened at Andy's house.

In a tough town, Andy's friend Bob was one of the toughest. Like his father before him, Bob had begun drinking heavily as a teenager and had accumulated records of school fights and simple assaults. He nearly always won

the fights, but had recently lost his job for missing work—he had been in jail after a bar brawl that got out of hand.

Late one Sunday afternoon, on a run to replenish the beer supply, Andy ran into his out-of-luck friend and invited him back to join the party. Once there, Bob quickly drank up a six-pack and began making passes at Andy's sister Charlene. Charlene had never liked Bob. The more she resisted his advances, the more aggressive he became, until she slapped him hard across the mouth. Bob stepped back and tripped over a coffee table. As he picked himself up, half the crowd was laughing at him. The other half was yelling at Charlene to "make it up to him like a

good girl," but Andy saw his sister's honor at stake.

Andy came at Bob. The two fought in the living room until Andy's older brother told them to "take it outside" after they broke the coffee table. As the crowd moved out to the porch to watch and cheer, Bob yanked a tire iron out of his trunk and used it to knock Andy to the ground, unconscious. The crowd fell silent only after Bob jumped into his car, ran over Andy twice, and roared away. After what seemed like forever, an ambulance responded and took Andy to the hospital emergency room, where he died 4 hours later of massive internal injuries.

The second dimension of the framework is the level at which the risk factor is most directly observed. The panel thought in terms of four levels:

- **Macrosocial:** Characteristics of large social units such as countries and communities. Examples are social values that promote or discourage violence against women, the structures of economic rewards and penalties for violent and nonviolent behavior, and catalytic events such as the 1992 announcement of the Rodney King beating trial verdicts.
- **Microsocial:** Characteristics of encounters among people. Examples are whether insults are exchanged, whether weapons are easily accessible, and how bystanders respond to an escalating confrontation.
- **Psychosocial:** Individuals' characteristics or temporary states that influence patterns of interaction with others. Examples are individuals' customary ways of expressing anger, or of behaving under the temporary influence of alcohol or stress.
- **Biological:** Chemical, electrical, and hormonal interactions, primarily in the brain, which underlie all human behavior.

Exhibit 5 (page 8) illustrates the framework with two descriptions of murders, which were adapted from actual murder

cases adjudicated during 1988 and recorded for other purposes. Just these two cases are sufficient to illustrate three principles about understanding and preventing violence:

- The diversity of these two events demonstrates the inadequacy of broad legal and statistical categories such as "murder" for understanding and preventing violent events. The risk factors and associated prevention strategies in just these two murders are quite different, and they represent only a small slice of the diversity in murder.
- It is important for prevention purposes to view a violent event as the outcome of a long chain of preceding events, which might have been broken at any of several links, rather than as the product of a set of factors that can be ranked in order of importance. To devise a strategy that might have prevented Jason's death (see box on page 5), one need not designate either Dave's accumulated humiliations or Jason's crying as the more "important" cause; rather, one must search for interventions that might have broken some link in a chain of events.

- Encouragingly, the two murders described here suggest a broad set of intervention points for preventing violent deaths before they occur.

It is useful to speculate about strategies that might have prevented Jason's and Andy's deaths. Conceivably, Jason's death might have been prevented if Dave had been raised to have higher self-esteem, if Evelyn had sought help when Dave first slapped her, if a nurse or social worker making regular home visits had noticed the inadequate family functioning or Dave's poor parenting skills and shown Dave how to deal with problems more constructively, or if the neighborhood were characterized by more active social networks or more accessible child care services. Andy's death might have been avoided if Bob's early adolescent patterns of drinking and fighting had led to a referral for successful alcohol abuse treatment, if someone had thought of a recreational alternative to the usual Sunday beer party, if Andy's older brother had used his influence to stop the escalating fight instead of moving it outside, or if emergency medical services had been more accessible. The point is not that any single strategy will eliminate all violence, but that violence levels can be reduced by a variety of individual decisions and nonintrusive public policies.

Exhibit 4. Matrix for Organizing Risk Factors for Violent Behavior

Units of Observation and Explanation	Proximity to Violent Events and Their Consequences		
	Predisposing	Situational	Activating
SOCIAL Macrosocial	Concentration of poverty Opportunity structures Decline of social capital Oppositional cultures Sex role socialization	Physical structure Routine activities Access: weapons, emergency medical services	Catalytic social event
Microsocial	Community organizations Illegal markets Gangs Family disorganization Pre-existing structures	Proximity of responsible monitors Participants' social relationships Bystanders' activities Temporary communication impairments Weapons: carrying, displaying	Participants' communication exchange
INDIVIDUAL Psychosocial	Temperament Learned social responses Perceptions of rewards/penalties for violence Violent deviant sexual preferences Social, communication skills Self-identification in social hierarchy	Accumulated emotion Alcohol/drug consumption Sexual arousal Premeditation	Impulse Opportunity recognition
Biological	Neurobehavioral* "traits" Genetically mediated traits Chronic use of psychoactive substances or exposure to neurotoxins	Transient neurobehavioral* "states" Acute effects of psychoactive substances	Sensory signal processing errors

*Includes neuroanatomical, neurophysiological, neurochemical, and neuroendocrine. "Traits" describe capacity as determined by status at birth, trauma, and aging processes such as puberty. "States" describe temporary conditions associated with emotions, external stressors, etc.

Source: Adapted from Reiss, Albert J., Jr., and Jeffrey A. Roth, eds., *Understanding and Preventing Violence*, Washington, D.C.: National Academy Press, 1993, p. 297.

Comprehensive violence prevention

Murder was only one of many types of violence explored by the panel. Research and evaluation findings concerning all forms of interpersonal violence suggest a variety of strategies that merit consideration and testing in any comprehensive violence prevention effort.

During child development. Promising violence prevention strategies include:

- Programs and materials to encourage and teach parents to be nonviolent role models, provide consistent discipline, and limit children's exposure to violent entertainment.
- Regular postpartum home visits by public health nurses to provide health information, teach parenting skills, and give

well-baby care, while taking the opportunity to detect signs of possible child abuse.

- Programs such as Head Start preschool enrichment and early-grade tutoring to reduce the risk of early-grade school failure, a well-known precursor of violent behavior.
- Social learning programs for parents, teachers, and children to teach children social skills for avoiding violence, ways to view television critically, and non-violent means to express anger and meet other needs.
- School-based anti-bullying programs.

Neurological and genetic processes. All human behavior, including aggression and violence, is the outcome of complex processes in the brain. Because of ethical constraints on research involving human subjects, the most firmly established

knowledge about these processes concerns aggressive behavior by animals. Its applicability to violent human behavior is still speculative.

Available research suggests that violent behavior may be associated with certain relatively permanent conditions and temporary states of the nervous system. These possibilities relate to the following processes: the functioning in the brain of certain hormones and other body chemicals called neurotransmitters; certain physical abnormalities in the brain, which could be present at birth or develop as a result of brain injuries or maturation; certain abnormal brain wave responses to outside stress; brain dysfunctions that, by interfering with communication and thought processes, lead to school failure and other childhood problems that are well-known precursors

Exhibit 5. Examples of Possible Risk Factors in Two Murders

Units of Observation and Explanation	Proximity to Violent Events and their Consequences		
	Predisposing	Situational	Activating
SOCIAL Macrosocial	1. Low neighborhood social interaction. 2. Neighborhood culture values fighting, drinking, sexual prowess.	1. No child care providers in neighborhood. 2. No local emergency medical services.	
Microsocial	1. Dave began hitting Evelyn months ago. 2. Widespread expectations of wild drinking parties at Andy's house.	1. Baby cries, Dave unable to cope. 2. Charlene humiliates Bob by resisting his advances.	1. Baby wets Dave. 2. Older brother says "take it outside," crowd goes outside to watch and cheer.
INDIVIDUAL Psychosocial	1. Dave has low self-esteem. 2. Bob develops adolescent pattern of drinking and violent behavior.	1. Dave humiliated by Evelyn's new job, his own lack of parenting skills. 2. Threats to Andy's family status, Bob's personal status.	
Biological	2. Possible familial traits of alcoholism and antisocial behavior in Bob's family.	2. Andy, Bob, and bystanders under alcohol influence.	

Murder 1: 10-month-old baby scalded to death by father; no witnesses.

Murder 2: 20-year-old male beaten and intentionally run over by automobile; many witnesses.

Note: This is an illustration of the Exhibit 4 framework.

of violent behavior; and temporary effects of drinking alcohol, perhaps heightened by hypoglycemia or other health problems.

The roles of these processes in human behavior are far too uncertain to specify any neurological "markers" for violence or to warrant any wholesale biomedical interventions solely to prevent violent behavior. However, they do suggest that violence prevention may be a positive side-effect of certain interventions intended to achieve other goals. Based on its review of available evidence, the panel concluded that potentially useful biomedical violence prevention strategies include:

- Programs to reduce maternal substance abuse during pregnancy, children's exposure to lead in the environment, and head injuries.

- Intensive alcohol abuse treatment and counseling programs for those in their early adolescent years whose behavior patterns include both conduct disorder and alcohol abuse, especially if alcohol dependence runs in their families.

- Developing pharmacological therapies to reduce craving for nonopiate illegal drugs, much as methadone reduces demand for heroin.

- Completing the development of medicines that reduce potentials for violent behavior during withdrawal from opiate addiction.

In statistical studies of twins, adoptees, and their families, researchers have found correlations suggesting that genetic and social processes interact as influences on the probabilities of many human behaviors, including alcoholism, antisocial behavior,

and juvenile delinquency. However, the few available studies of human violent behavior have produced mixed results, suggesting at most a weak genetic influence on the chance of violent behavior. The statistical patterns make clear that, even if eventually discovered, any such influence would involve many genes rather than any single "violence gene" and would involve interactions with social conditions and life events.

Social and community-level interventions. Research on social and community-level influences on violence is difficult to carry out, and evaluations of interventions at these levels are scarce. As a result, the knowledge base for formulating violence prevention strategies at these levels is not as strong as it should be. Research con-

ducted thus far highlights the need for further development in the following areas:

- Housing policies to reverse the geographic concentration of low-income families.
- Programs to strengthen community organizations, social networks, and families that promote strong prosocial values.
- Economic revitalization in urban neighborhoods to restore opportunities for economic self-advancement through prosocial, nonviolent activities.
- Stronger community policing programs as a means of improving police responsiveness to community needs, stronger community-based violence prevention initiatives, reinforcement of prosocial values, and increased certainty of arrest and punishment for violent crimes.
- Strategies to reduce the violence-promoting effects of community transitions that occur in the course of new construction, gentrification, and other disruptions.
- Programs to reduce violence associated with prejudice and with the activities of some gangs.

Situational approaches. The strategies outlined above are long-range approaches rather than immediate means to prevent violence. Time is needed to change the pathways through which a few aggressive children develop into violent adults and to change the communities in which they live.

Shorter-term strategies for violence prevention require altering or eliminating situations that present immediate opportunities for violent events. One approach involves cooperation between police and business proprietors to diagnose and remove the risk factors in "hot spots"—addresses or telephone locations that generate unexpectedly high volumes of "911" calls for emergency police assistance to deal with violence.

The diversity of violence means that different "hot spots" will require different remedies. However, a large body of research points directly to three commodities that should often be considered in situational violence prevention:

- Alcohol: Use of prevention education, laws and law enforcement, taxes, and social pressure, among other measures to deal with underage drinking. Such measures appear to reduce teenagers' involvement in automobile crashes and may therefore reduce their excessive involvement in violence.
- Illegal drugs: Reducing the demand that fuels violence-ridden illegal drug markets; and using drug abuse prevention, drug treatment, coordination of in-prison drug treatment with post-release treatment, and (in the near future) methadone equivalents for drugs other than heroin.
- Firearms: Better enforcement of laws that regulate the allocation and uses of guns, and especially reducing juveniles' access to guns by enforcing laws prohibiting gun sales to minors and by disrupting illegal gun markets.

Diversified problem-solving in violence prevention

The strategies discussed above constitute a portfolio of promising violence prevention opportunities. The findings of program evaluations are not yet conclusive enough to warrant a national commitment to any single strategy. Therefore, violence control policy should be diversified through small investments in testing many strategies rather than a major commitment to nationwide implementation of one or two. Interventions that succeed in one setting sometimes fail in another because of the unintended consequences of interactions that are poorly understood. Even when the potential effectiveness of a specific strategy is fairly clear, the choice of implementation tactics may not be. Strategies aimed at predisposing risk factors, even when they are effective, require time to demonstrate that they will work. And while some strategies will doubtless prove more effective than others, the diversity of violent events guarantees that no single strategy will prevent more than a small fraction of them.

For these reasons, "diversified investments" in many small-scale but sustained problem-solving initiatives are needed.

Like initiatives to develop vaccines for preventing a single disease, each problem-solving initiative should focus on a specific source of violence. Each initiative involves five steps:

1. Diagnose the problem, using criminological and epidemiological techniques to document its importance and identify risk factors that suggest a preventive strategy.
2. Develop prototypes of several tactics for strategy implementation that show promise based on theory, research findings, or experience.
3. Compare the effectiveness of the alternative tactics through rigorous evaluations that use randomized assignment wherever feasible.
4. Refine the tactic for implementation, using the evaluation findings as the basis.
5. Replicate the evaluation and refinement steps to sharpen the effectiveness of the interventions and adapt them to local community characteristics.

The panel called for problem-solving initiatives aimed at sources of violence in several areas: childhood development; "hot spot" locations, routine activities, and situations; illegal markets, especially for drugs, guns, and prostitution; firearms, alcohol, and drugs; bias crimes, gang activities, and community transitions; and relationships between intimate partners.

Over time, this problem-solving approach may reduce the levels of different types of violence in large enough numbers to make a significant "dent" in the overall problem. Such progress in prevention is especially likely when the chances of early success can be maximized by focusing on certain categories of problems and interventions: those for which the risk factors are most firmly established, those for which evaluation findings are most positive, and those for which tactics are most easily marshaled. Progress in prevention also requires treating initial evaluation failures (which are inevitable) as indicators of the need for tactical refinements rather than as signals to abandon a strategy entirely. Simultaneously, progress in understanding violence will be made to the extent social

scientists make greater use of findings from well-controlled outcome evaluations as evidence of the causes of violent events.

The preventive, problem-solving approach to violence is not intended to replace arrest and other traditional criminal justice responses. But it would involve integrating criminal justice responses with a broad range of preventive interventions, which are often administered by other public and private agencies. For example, arrest at the crime scene has been found to break the cycle of spouse assault/intervention under some conditions. However, arrest has never been systematically compared to, or integrated with, such interventions as referring battered women to shelters, teaching batterers nonviolent ways to deal with anger, or requiring batterers to participate in alcohol abuse treatment. Coordinating and evaluating all these elements of a spouse assault prevention initiative would require cooperation between police departments and the agencies that provide the other services.

More generally, violence problem-solving will require long-term collaboration and new organizational arrangements among local law enforcement, criminal justice, schools, and public health, emergency medicine, and social service agencies, all working with program evaluators and other researchers. Developing these arrangements will also require new leadership approaches by administrators of all agencies involved.

Building knowledge for future use

To strengthen the knowledge base for developing the next generation of violence prevention strategies, three research initiatives are needed: better systems to measure violence, research in neglected topics, and a long-term study of the factors operating in communities and in individual development that cause a small percentage of children to have high potential for violent behavior as adults, while most do not.

Measurement systems. Because of certain basic limitations in systems for gathering information on violence, many important questions in policy and science cannot be answered today, and emerging violence problems are sometimes slow to be discovered. For these reasons relevant information systems should be modified and expanded to provide:

- Better counts of intrafamily violence, robberies committed in commercial establishments, violent bias crimes, and violence in schools and correctional facilities.
- More comprehensive recording of sexual violence, especially events involving intimates, and acts (for example, serial killings) in which the sexual component may not be immediately apparent.
- Baseline measures of the prevalence and incidence of risk factors for violence (for example, arguments between intoxicated spouses or intimates, drug transactions, and situations in which employees handle cash alone, especially at night).
- Links between the systems that measure all aspects of a violent event—the consequences, the treatment of victims, and the circumstances precipitating the event.
- Better systems for measuring violence levels in small geographic areas, to facilitate evaluating the effects of intervention.
- More detail about the attributes of violent events and their participants, to facilitate better studies of risk factors.

Neglected research areas. Certain research areas are of special concern because, having been largely devoid of resources, they could make rapid progress with relatively small-scale infusion of funds. These areas include:

- The effects of weapon type on death rates in assaults and robberies.
- Interactions among demographic, situational, and spatial risk factors for violent events and violent deaths.
- Comparisons of how individuals' potentials for violent behavior develop in

ethnically and socioeconomically different communities.

- The nature of neurological responses that indicate elevated potentials for violent behavior.
- Development of medications that prevent violent behavior without the debilitating side effects of "chemical restraint."
- Interactions among cultural, developmental, and neuropsychological causes of sexual violence against strangers, intimate partners, and other family members.
- Violent behavior of custodians (for example, caretakers, correctional officers) against wards (for example, children in day care and prison inmates).

Multicommunity longitudinal studies.

To lay the scientific groundwork for the next generation of preventive interventions, a multicommunity program of developmental studies of aggressive, violent, and antisocial behaviors is needed. By tracing the influences of the community, the family, and other individuals on children as they grow up, this program should improve the understanding of causes and lead to improved medical, developmental, and social interventions. The program should include randomized experiments that will identify developmental and social interventions for preventing high potentials for violent behavior in children. With support from the National Institute of Justice and the John D. and Catherine T. MacArthur Foundation, implementation of this recommendation has begun through a Program on Human Development and Criminal Behavior. Additional support is being solicited from a consortium of private and public sources.

Conclusion and implications

Violence is a pervasive national problem, more serious in the United States than in the rest of the industrialized world, and especially serious for males who belong to demographic and ethnic minorities. However, the problem is neither unprecedented nor intractable. Existing knowledge reveals a number of promising prevention strate-

gies involving factors at work in communities, in individuals, and in hazardous situations that present special risks of violence.

Implementing effective prevention strategies requires recognizing that the criminal justice response is not enough to reduce violence levels. Rather, prevention requires comprehensive problem-solving strategies that involve criminal justice agencies, schools, and public health, emergency medicine, and social service agencies. Cooperation among these agencies and community-based organizations is needed in specific problem-solving initiatives to systematically test and refine promising violence prevention tactics. At the same time,

to lay the groundwork for the next generation of approaches to violence prevention, research should be carried out to improve the measurement of violence, to study certain topics neglected in recent years, and to learn more about what causes a small proportion of all children to commit violent acts as adults.

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Findings and conclusions of the research reported here are those of the researchers and do not necessarily reflect the official position or policies of the U.S. Department of Justice.

The National Institute of Justice is a component of the Office of Justice Programs, which also includes the Bureau of Justice Assistance, Bureau of Justice Statistics, Office of Juvenile Justice and Delinquency Prevention, and the Office for Victims of Crime.

NCJ 145645