
Framing Public Policy and Prevention of Chronic Violence in American Youths

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Metaphors can both inspire and mislead the public. Current metaphors for youth violence are inconsistent with scientific evidence about how chronic violence develops and evoke inaccurate or harmful reactions. Popular, problematic metaphors include superpredator, quarantining the contagious, corrective surgery, man as computer, vaccine, and chronic disease. Four new metaphors that more accurately reflect the science of child development are proposed to shape the field. Preventive dentistry offers a lifelong system of universal, selected, and indicated intervention policies. Cardiovascular disease offers concepts of distal risk factors, proximal processes, equifinality and multifinality, and long-term prevention. The Centers for Disease Control and Prevention's public health model focuses on injury and the victim to elicit popular support. Public education for illiteracy offers concepts of long-term universal education coupled with specialized help for high-risk youths and goes beyond metaphor to represent a truly applicable framework. Research is proposed to test the scientific merit for and public receptivity to these metaphors.

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Robert L. Johnson, chair of the Panel for the National Institutes of Health State-of-the-Science Conference on Preventing Violence and Related Health-Risking Social Behaviors in Adolescence (National Institutes of Health, 2005), was so exasperated with existing youth violence prevention models that he interrupted the proceedings by asking, "Why can't there be a 'vaccine' for violence prevention?" Johnson's metaphor framed the problem of youth violence in a way that communicated his implicit model for the etiology and prevention of chronic violence in youths, namely, that (a) external factors can infect a young child; (b) once infected, a child is forever destined to a life of violence, as though violence were a fatal disease; and (c) a one-time early vaccination might build resistance to protect the child against future infection and, thus, against violent behavior. Other metaphors have framed the problem and solution to chronic youth violence, including *quarantining*, *contagion*, *corrective surgery*, *moral defect*, and *chronic disease*. The power of metaphors cannot be overstated, for they guide public perception, funding, and even scientific inquiry.

This article adapts the perspective of the analysis of frames and schemas (Iyengar, 1991; Lakoff, 1996; Schank, 1998) to examine the assumptions inherent in the metaphors that have been proposed to address the crucial national problem of youth violence. I conclude that although several of these metaphors have been strategically successful in capturing the attention of the public, they are not consistent with contemporary developmental scientific findings. Four new metaphors (*preventive dentistry*, *cardiovascular disease*, *public health*, and *education*) are proposed that are more consistent with scientific findings about child development and might prove more useful in moving forward science, practice, and policy in this field. Finally, it is proposed that rigorous scientific research should be conducted to test the impact of these reframes on public response.

The Problem of Chronic Violence in Adolescents

The annual cost of crime to American society now exceeds \$1 trillion (Anderson, 1999). One framing of this problem attributes this cost to a relatively small number of chronically violent individuals, called *career criminals* by Blumstein and Cohen (1987) and *early starters* by Moffitt (1993). Over half of all crimes by members of a cohort across their life spans were committed by fewer than 7% of that cohort (Howell, Krisberg, & Jones, 1995), who cost society 1.6 to 2.3 million dollars each in costs to victims, court costs, and costs of incarceration and treatment (Cohen, 1998, 2005). If each chronically violent individual costs society 2 million dollars, a perfunctory economic analysis suggests that a preventive intervention that costs \$1,000 per high-risk youth would yield favorable economic returns to investment (i.e., the benefits would equal or exceed the costs) if even just 1 youth out of every 2,000 served were saved from this costly outcome. (*Saved* youths are operationalized as those who would have become chronically violent if the intervention had not been applied but did not become chronically violent because of the

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intervention. Comparison with randomly assigned control groups is the standard method to compute the number of saved lives.) Likewise, a universal intervention that costs \$1 per child and is directed at all 2 million children in a state would be economically successful if just one child in that state were saved from a chronically violent outcome.

Furthermore, studies have shown that American taxpayers would be willing to pay large sums to prevent chronically violent outcomes (Ludwig & Cook, 2001), provided that the prevention programs work (Cohen, Rust, Steen, & Tidd, 2004). Various randomized controlled trials, meta-analyses (Yoshikawa, 1994), and reviews (e.g., *Blueprints for Violence Prevention*; Elliott & Mihalic, 2004) have found that several interventions for chronic violence prevention do indeed work, including, among others, nurse-practitioner home visits (Olds et al., 1998), multi-systemic therapy (Henggeler, Schoenwald, Bourduin, Rowland, & Cunningham, 1998), and multidimensional treatment-based foster care (Chamberlain, 2003).

Unfortunately, these evidence-based programs are not funded well and are not penetrating the marketplace of social services for youths (Tolan & Dodge, 2005). It appears that the public and policymakers do not yet believe that prevention programs would be cost beneficial, perhaps because their advocates are not politically powerful or have not discovered the right metaphor to capture the public's sentiment (Goss, 2006). Why is the public skeptical about the prevention of chronic violence and why is overall public spending on chronic violence prevention in this country abysmally low? Furthermore, why have scientists restricted their testing of preventive interventions to a rather narrow set of programs?

I assert here that the public, policymakers, and the scientific community have been constrained in their visions

because the metaphors that have been used to frame the problem of chronic violence (a) have emphasized retribution and punishment rather than prevention and (b) are not consistent with the scientific evidence. New metaphors that are more consistent with recent scientific findings about antisocial development and prevention might offer more inspiring visions. Metaphors are crucial to this and all fields because they both constrain and enable research, intervention design, and social marketing.

Metaphors in Human Communication

Metaphors and frames are commonly used in human communication because listeners, as processors of information, are bombarded with so many stimulus cues that they cannot possibly encode them all. Speakers use metaphors as heuristic devices to help the listener comprehend an idea. The anthropologist Gregory Bateson (1972) first applied the concept of the frame to describe how concepts are communicated in human discourse. He defined a frame as a cognitive model that is recognizable to the listener, invokes other ideas that the listener already accepts, and helps the listener to understand an otherwise confusing bit of information. The cognitive psychologist Roger Schank (1998) argued that metaphors have utility to the extent that they invoke recognizable scripts or stories about how the world operates. Reframing is successful to the extent that it invokes the same script but recasts it in a new way that is understandable to the listener. The linguist George Lakoff (1996; Lakoff & Johnson, 1980) argued that the use of metaphors in communication subtly creates new realities and shapes the listener's views and beliefs. Although the metaphor must ring true to be accepted, the framed concept takes on the qualities of the source of the frame, whether or not they are true. How an issue is framed often determines success in policymaking. Political scientists have observed how advocates use metaphors in agenda building (Cobb & Elder, 1972) and problem and issue definition (Kingdon, 1984; Rochefort & Cobb, 1994) in politics.

It is not claimed that metaphors are scientific theories. In fact, the difference between a metaphor and a theory is that the metaphor is intentionally analogical and heuristic. However, the thesis is that metaphors are more than heuristic; they drive public perception, policymaking, and scientific research on etiology and prevention. In the best use, metaphors are posited, scientifically tested, and then discarded in favor of increasingly accurate metaphors across time. The claim here is that the metaphors that have been posited for youth violence have been found to be scientifically inaccurate and must be discarded.

Strategic Frame Analysis

Strategic frame analysis was developed to apply basic research in cognitive schemas to the domain of public communications (FrameWorks Institute, 2006). "Strategic frame analysis relies on a series of methods adapted from traditional opinion research, media studies and cultural and cognitive fieldwork including survey research, semi-structured interviews, focus groups, media content analysis,

metaphor analysis, and media effects tests” (Gilliam & Bales, 2001, p. 6). This approach also addresses values, context, tone, visuals, messengers, and solutions (Frame-Works Institute, 2006).

Schemas are cognitive images, scripts, metaphors, and stories about a phenomenon that are developed through experience and that provide a frame or lens to interpret future stimuli (Schank, 1998). When primed, schemas become activated and provide expectations for behavior (Bargh, Chaiken, Raymond, & Hymes, 1995). They frame a set of stimuli so that the person can understand and respond.

Tversky and Kahneman (1981) demonstrated that the manner in which a problem is framed has dramatic impact on the choices and decisions that one makes. For example, they found in the so-called *Asian disease problem* that schemas (frames) that emphasize future negative outcomes for a person have more influence on that person’s behavior than frames that emphasize the identical outcome framed positively (hence, prospect theory and the axiom “losses loom larger than gains”).

A frame or lens constrains and biases the associations between new stimuli and existing mental images because any stimulus that is not in the frame or in focus does not get stored or processed. Frames also enable new connections and innovative solutions, because by disregarding irrelevant stimuli, the connections among the remaining stimuli become clearer. Gigerenzer (2007) argued that frames and heuristics actually improve decision making beyond formalistic analysis. Of course, even the terms *frame* and *lens* are metaphors to help us understand human information processing.

A Psychological Perspective on Why Certain Frames Succeed

Although strategic frame analysis provides methods, no theory has been formulated and tested yet to understand fully why certain frames are endorsed by the public and others are not. I propose that the successful frame has three features: *assimilation*, *accommodation*, and *action*. First, the frame must be consistent enough with the listener’s pre-existing schema to be assimilated in the sense formulated by Piaget (1926) in his theory of assimilation and accommodation and by Sherif and Hovland (1961) in their theory of assimilation and contrast. Second, it must also fill a gap in the listener’s schema; that is, it must extend the schema, reshape it, and lead the listener to accommodate a new construction of the world. Rules for accommodation are provided by Piaget (1926), Ross and Nisbett’s (1991) work on distortions and attributional bias, Tversky and Kahneman’s (1974) theory of heuristics under uncertainty, Zimbardo’s (1999) hypotheses of the effect of discontinuity in social interactions and cognitions, and my (Dodge, 2006; Dodge & Pettit, 2003) model of social information processing. Third, a successful frame is invigorating to the listener because new insight has been achieved through accommodation; thus, the listener engages in action, such as financial giving or voting in favor of new policies.

Case Study of Crime Reporting

Iyengar (1991) pioneered the empirical analysis of framing with his study of the impact of the media’s reporting about violent crime. He concluded that the media’s overwhelming use of episodic (rather than thematic) reports has led listeners to conclude that criminal actors are personally responsible for their crimes. Episodic communications elicit attributions that the individual actor is responsible, whereas thematic communications elicit attributions that an individual act is part of a cultural or historical trend that minimizes individual responsibility (and credit or blame). Furthermore, the media’s bias in favor of reporting violent crimes by African Americans (rather than violent crimes by Whites or nonviolent actions by African Americans) reinforces a stereotype of young African American men as habitually violent. In laboratory experiments, Gilliam and Iyengar (2000) showed that presentation of a hypothetical crime led White listeners to access from memory a *crime script* that led to their inaccurate recall that the perpetrator must have been a young African American male. Peffley, Shields, and Williams (1996) found that presentation of a mug shot of a young Black perpetrator led White participants to respond by supporting punitive crime policies, including the death penalty and mandatory long prison terms.

From an information-processing perspective, the mug shot is recognizable from stereotypes and evokes a frame or schema that enables White observers to make sense of the disconcerting news report of a violent crime as being caused by a bad apple. Bad apples can never be made good, and they cause nearby apples to rot as well. This metaphor could lead to the conclusion that intervention with the perpetrator will never be successful and that throwing the bad apple out, that is, segregating the youth from the community, is a reasonable policy action. The metaphor of a bad apple helps the observer to (a) make sense of the youth’s behavior within the observer’s personal constructs by disregarding inconsistent information about the youth (assimilation), (b) make predictions about the youth’s future behavior (accommodation), and (c) endorse policies toward the boy and the broader problem (action).

One property of schemas is that if the current facts do not fit an established schema, the facts are rejected, not the schema. “Understanding means finding a story you already know and saying, ‘Oh yeah, that one’ ” (Schank, 1998, p. 71). Even just one element of a script can affirm the entire story and make it accessible to one’s consciousness. Gurwitz and Dodge (1977) found that presentation of just one piece of affirming information about a stereotype is sufficient to confirm the entire stereotype, whereas presentation of even several disconfirming cues has little effect on disconfirming the stereotype. “Finding some familiar element causes us to activate the story that is labeled by that familiar element, and we understand the new story as if it were an exemplar of that old element” (Schank, 1998, p. 59).

Case Study of Kids and Guns

The schema of kids and guns provides a second example. The coupling of kids and guns into a single schema in the consciousness of the American public has come about rather dramatically over the past few decades. Goss (2006) conducted an analysis of the number of articles in the *New York Times* over the period January 1980 through December 2000 in which both *children* (or *kids*) and *guns* were mentioned together in the headline or lead paragraph. In the 1980s, the number of such articles averaged fewer than 5 per year. In the early 1990s, the annual number jumped to between 10 and 20. In 1999, the annual number had risen to 62. It is not clear whether this dramatic trend solely reflects actual events or represents a growing stereotype. In either case, Goss noted, "It does provide suggestive evidence that there was a growing problem, either real or perceived, with kids and guns, and that elites (including media elites) were paying attention to the problem" (p. 119).

The coupling of kids and guns began with realistic stories that could be assimilated by the public viewer as a sensational tragedy. As the frequency and devastation of some of these incidents grew with school shootings in the 1990s, the public's schema about children had to accommodate this change. Children were no longer assumed to be innocent but could be horrific criminals as well. Finally, the growing schema had an impact on action. The schema was vague enough that it mobilized action in opposite directions. On the one side, over 40 states loosened laws about juvenile transfers to adult criminal court for adjudication, making it easier for district attorneys to prosecute juveniles harshly. On the other side, this schema mobilized action to prevent child gun violence. President Clinton began using the term *child safety locks* instead of *gun locks* to advocate for his solution. Women protested for gun control through the Million Mom March in Washington, DC, and 46 new gun control organizations were founded between 1990 and 2002 (Goss, 2006).

Evaluating Existing Metaphors for the Development and Prevention of Chronic Violence

I hypothesize that common metaphors for the prevention of violence may have been politically successful but have failed to provide the basis for effective public policy because (a) they are scientifically inaccurate and (b) they have not captured the creativity of prevention scientists in ways that lead to increased prevention effectiveness. The remainder of this article is devoted to an analysis of common metaphors and the proposal of new metaphors that may offer greater potential for impact.

A framing analysis helps explain how and why particular metaphors about youth violence take hold and are perpetuated. The scientific literature in child development helps with the evaluation of whether a metaphor has scientific validity. I discuss eight metaphors that have been applied most commonly to the problem of youth chronic violence, along with a summary of the images that they

evoke in terms of (a) location of the problem (self vs. environment), (b) whether violence is preventable, (c) whether after-the-fact violence can be treated, (d) whether the implied model has a developmental component, (e) to whom a preventive intervention should be directed (child or environment or both), (f) how long preventive intervention must last to be successful, (g) whether early screening is likely to be useful, and (h) whether the metaphor is consistent with empirical developmental science (see Table 1).

The Superpredator

In the November 1995 issue of *The Weekly Standard*, John Dilulio coined a new term and frightened policymakers into action when he declared, "On the horizon . . . are tens of thousands of severely morally impoverished juvenile *super-predators* [italics added]. . . . Juveniles are doing homicidal violence in 'wolf packs' " (p. 23). Dilulio's image of a child as a superpredator animal gained further national exposure when he posed in a leather jacket in front of a graffiti-covered wall to illustrate a story for *Time* magazine (Schiraldi & Kappelhoff, 1997). This image was supported by other academics, notably James Allen Fox, who warned of a "teenage time bomb" that would explode into a "bloodbath of teenage violence" (Zoglin, 1996, p. 48), and James Q. Wilson, who predicted "30,000 more young muggers, killers, and thieves" in the near future (Krisberg, 2005, p. A2).

The metaphors and schemas articulated by these academics were immediately successful in influencing policy. On May 29, 1996, U.S. Representative Bill McCollum of Florida introduced the Violent Youth Predator Act of 1996 (cited in Dilulio, 1996; note the use of the term *predator*), which requires officials to prosecute juvenile chronic violent offenders as adults and to increase mandatory prison time for juveniles who use firearms when committing violent federal crimes or drug-trafficking offenses. Dilulio (1996) lobbied for the bill in the media by resorting to the predator frame:

The Democrats and their expert minions should stop seeing mere delicate delinquents where ever more veteran police officers, district attorneys, inner-city ministers, and crime victims see violent youth *predators* [italics added]—and have the real live scars, scares, and nightmares to prove it. (p. 35)

Dilulio won, and the bill became law. Soon thereafter, more than 40 states enacted legislation to make it easier to transfer juvenile offenders to adult court. Zero-tolerance-for-weapons legislation spread across all 50 states over the next 5 years, making it mandatory to suspend or expel offending youths from schools (Krisberg, 2005), and this country began the "most massive prison expansion in American history" (Hayden, 1995, p. B13).

This metaphor was successful in catalyzing policymakers and the public because it readily accessed the public's hidden stereotype of the violent youth as someone who is dangerous, living in a hopeless situation, and not worthy of empathy or support (i.e., assimilating Gilliam & Iyengar's, 2000, crime script and thus eliciting accommodation to a newer superpredator script). The policy action

response that is consistent with this script is retribution and incarceration.

The science of the superpredator metaphor has proven it false. The generation of superpredators has yet to appear, the blood bath never ensued, and the youth violence rate plummeted precisely when it was predicted to explode (Blumstein & Wallman, 2000). However, the politics of the metaphor succeeded: Dilulio went on to become President Bush's first director of faith-based initiatives, and Fox became a regular on national television whenever crime statistics were discussed. When future data failed to reveal an increase in juvenile crime, the academics backed off, slightly. Fox acknowledged that he "never meant there would be a blood bath. Some of it was part of getting people's attention" (Schiraldi & Kappelhoff, 1997, p. 1). Thus, he acknowledged his manipulative use of the metaphor to promote his policy agenda. However, the metaphor lives on: On June 18, 2007, former New York Police Chief William Bratton attributed recent crime increases as follows: "To some extent, it's the super-predator complex" (Lehrer, 2007, p. 1).

Dilulio's superpredator metaphor clearly identified the source and cause of the problem as within the child (Dilulio, Bennett, & Walters, 1996). Although economic poverty and harsh maltreatment might be implied as distal causal factors, Dilulio et al. (1996) clearly blamed the boy as accountable for his own "moral poverty" (p. 28), without a clear model of how that boy developed into a predator. Because that boy made a free-will moral choice, prevention is not possible and treatment will not be successful. Instead, he and his political allies used his metaphor to advocate stiffer sentences for youth crime, increased funding for prisons, and less tolerance of even early signs of misbehavior. The public policy impact was that America came to fear children more, rather than trying to help them.

A major corollary of this metaphor is that once an antisocial youth begins his or her deviant path, he or she cannot change. The predatory youth is destined to a life of predatory crime. This assertion is simply false, however, according to developmental epidemiologic findings. Although the stability of antisocial behavior from early childhood through adulthood is quite high when measured by stability coefficients, numerous developmental epidemiologic findings indicate that a sizeable proportion of early-starting children at high risk for conduct disorder desist in their trajectories of antisocial behavior through experiences and natural interventions across development (Dodge, Coie, & Lynam, 2006). Sampson and Laub (1990) found that fortuitous life events, including the establishment of warm social bonds and marriage, could interrupt deviant trajectories. Stouthamer-Loeber, Wei, Loeber, and Masten (2004) identified a number of factors that contribute to desistance in this trajectory, including intervening life experiences. Lansford et al. (2006) found that patterns of noncoercive parental decision making and low family stress deflect trajectories of antisocial behavior among children who had been maltreated.

One way in which an early-starting antisocial youth might not become a chronically violent adult is through interaction effects with other factors. Among the most important discoveries in all of science over the past 5 years is the interaction effect between genes and the environment in producing violent outcomes, indicating the remarkable plasticity of high-risk children and their responsiveness to positive environments. Caspi et al. (2002) and Jaffee et al. (2005) have found that children at high genetic risk for conduct disorder are *more* responsive than others to environmental factors such as physical maltreatment (and its obverse of nurturing parenting) in altering their life course. That is, protection from maltreatment through nurturing

Table 1
Comparison Across Metaphors for Chronic Violence

Metaphor	Locating problem/solution	Is problem inherent or acquired?	Is prevention universal, selected, or indicated?	After diagnosis, can problem be treated?	How long must intervention last?	Is there a role for screening?	Is metaphor supported by scientific findings?
In use now							
Superpredator	Self	Inherent	None	No	Permanent	No	No
Moral defect	Self	Inherent	None	No	Permanent	Yes	No
Quarantine	Self	Inherent	None	No	Permanent	No	No
Man as computer	Environment	Acquired	Universal	Yes	Long	No	Partially
Corrective surgery	Self	Inherent	Indicated	Yes	One time	Yes	Partially
Vaccine	Self	Inherent	Universal	No	One time	Yes	No
Chronic disease	Both	Both	All	No	Permanent	Yes	Partially
Proposed							
Preventive dentistry	Both	Acquired	All	Yes	Long	Yes	Yes
Cardiovascular disease	Both	Acquired	All	Yes	Long	Yes	Yes
Public health	Both	Acquired	All	Yes	Depends	Yes	Yes
Illiteracy	Both	Acquired	All	Yes	Long	Yes	Yes

parenting has a stronger positive impact on high-risk than low-risk children. Unfortunately, biological risk and environmental risk often co-occur in the natural environment, and so high-risk children who could most benefit from a nurturing environment are the least likely to be exposed to it. These children might benefit more, not less, from intervention than other children. This is wonderfully optimistic news. Policies should be directed to interrupt the naturally occurring biological–environmental risk correlation through systematic intervention for high-risk youths.

Randomized controlled trials of interventions have supported the plasticity of high-risk youths. Successful interventions with highly deviant youths, such as multisystemic therapy (Henggeler et al., 1998), multidimensional treatment foster care (Chamberlain, 2003), and functional family therapy (Alexander & Parsons, 1982), indicate that early antisocial trajectories are not destiny and that withholding resources from this group may be a premature policy decision. Psychosocial interventions with early-starting youths with conduct problems have also proven successful in altering trajectories of antisocial behavior in elementary school (Conduct Problems Prevention Research Group [CPPRG], 1999, 2002a, 2004). Clearly, a perception of early-starting deviant youths as unchangeable and untreatable and a policy of segregating high-risk youths and giving up on them is simply not supported by empirical developmental and prevention science.

Chronic Violence as a Moral Defect Due to Lack of Religion

A second framing of youth violence has had a similar powerful effect on the public and has also proven inaccurate. Chronic violence has been framed as a moral defect caused by a lack of religion by some psychologists, philosophers, and religious scholars. John Dilulio (1995) framed his proposed solution to the superpredator problem as follows: “My one big idea is borrowed from three well-known child-development experts—Moses, Jesus Christ, and Mohammed. It’s called religion” (p. 29).

In *The Bell Curve*, Herrnstein and Murray (1994) asserted that disadvantaged children at high risk for chronic violence are both genetically and morally defective. They wrote,

Finally, there are moral considerations. Perhaps the ethical principles for not committing crimes are less accessible (or less persuasive) to people of low intelligence. They find it harder to understand why robbing someone is wrong, find it harder to appreciate the values of civil and cooperative social life, and are accordingly less inhibited from acting in ways that are hurtful to other people and to the community at large. (Herrnstein & Murray, 1994, pp. 240–241)

The policy implications of the views of these powerful authors follow:

Much of public policy toward the disadvantaged starts from the premise that interventions can make up for genetic or environmental disadvantages, and that premise is overly optimistic. Part of our answer has been positive: *Much can and should be done to*

improve education, especially for those who have the greatest potential [italics added]. (Herrnstein & Murray, 1994, p. 550)

Thus, framing a chronically violent youth as morally defective implies that the problem lies inside the child and should not be attributed to environmental factors, such as poverty or family unemployment. Herrnstein and Murray’s conclusion is that the child’s defect is not preventable or treatable and that segregating these children into prisons seems to be the only humane course of intervention: “In trying to understand how to deal with the crime problem, much of the attention now given to problems of poverty and unemployment should be shifted to another question altogether: coping with cognitive disadvantage” (p. 251). Herrnstein and Murray also advocated redeploying public resources away from the disadvantaged and toward those with the greatest potential. They did advocate early screening, not to identify high-risk youths who could be helped, but instead to identify advantaged youths who could be given more resources.

Herrnstein and Murray’s (1994) framing of crime as a moral defect succeeded in mobilizing policy. Congress provided significant funding for character education in schools, which was not to be confused with social–cognitive skills training or social–emotional learning. President Bush led a movement to provide religious organizations with access to funds for after-school and church programming for youths. This frame caught on with the public because the public could *assimilate* its premise of crime as a moral issue, which is consistent with a popular religious frame. It led the public to *accommodate* this frame to include the notion of inherent or permanent moral defect and to mobilize *action* in the form of retributive incarceration and public funding for religious organizations. It was not mere coincidence that John Dilulio became President Bush’s first director of publicly funded faith-based initiatives.

The moral defect premise has also permeated the field of philosophy. Gaus (1991) argued that legal reparations for a crime are insufficient as a public policy because they do not address the moral culpability of the criminal. He wrote,

In addition to Pure Retribution, I want to defend: *Moral Restoration* [italics added]. In some cases of criminal offense, punishing the offender is a necessary condition of a return to “equality.” . . . There exist some cases in which punishment, along with compensation, is part of a set of necessary and sufficient conditions for this result. This claim, which I am drawing from Kant, is essentially metaphorical; we need to explicate the metaphor, but something like it has been a crucial feature of disputes about retribution. Advocates have consistently employed talk about restoring the moral balance or annulling the crime. (Gaus, 1999, p. 3)

Gaus thus defended aggressive retribution against aggressive criminals as a moral response to immoral crime.

Finally, religious scholars have also framed violent crime as a moral problem. In their volume jacket cover, Day and Laufer (1987) wrote that they “consider the neglected factor of religion in the formula concerning the

etiology and treatment of crime.” They placed responsibility for chronic violence squarely into the hands of the offending youth, who is culpable and worthy of incarceration (and, in the afterlife, hell). The decision to engage in a violent act is viewed as a matter of free will, thus excluding social science and professional mental health from intervention. Lack of religion is the source of violent behavior, and finding religion is the sole path to rehabilitation/redemption.

Developmental science has proven instead that chronically violent behavior develops out of complex interactions among both biological (not defective) factors and early adverse life experiences that include poverty, exposure to violent models, and victimization and that later environmental experiences (including intervention) can deflect trajectories of crime (Dodge, Coie, & Lynam, 2006).

Quarantining Deviant Youths Who Are Contagious

Yet another popular metaphor is that youth violence is contagious (Cook & Goss, 1996; Gladwell, 1996). Glaeser, Sacerdote, and Scheinkman (1995) found that crimes were concentrated in jurisdictions to a greater degree than individual characteristics would suggest, and they offered contagion as the explanation. Loftin (1986) analyzed the spatial clustering of assaultive violence and concluded that a “social contagion process” (p. 550) was the best explanation. Cook and Laub (1998) invoked the term *epidemic* to describe secular trends in youth violence over the past decades. The implication of this frame is that violent youths will spread their violence to those in proximity if they are not segregated from others.

Policymakers have implicitly accepted this framing by resegregating deviant children in schools, residences, and communities. Movements toward inclusive mainstreaming have all but stopped and have been replaced with increased use of alternative schools, boot camps, and in-school suspension placement with other deviant youths. These interventions essentially segregate deviant youths from the mainstream, quarantining them with other deviant youths in placements that do not serve their best interests but placate teachers, parents, law enforcement officers, and the public, all of whom want to be safe from the potentially contagious influence of deviant youths. The metaphors driving this practice are that deviance in youths is contagious and that the only way to stop their influence is to quarantine them.

The contagion metaphor implies four corollaries with policy implications that can be examined in light of contemporary developmental science: (a) deviant peer influence is strong; (b) peer influence is asymmetric, that is, deviant youths influence prosocial peers but not vice versa; (c) deviant influence applies in all circumstances (e.g., all settings, all adult leaders) to all peers (e.g., prosocial and average, young and old) and cannot be stopped except by quarantining; and (d) there is a net benefit to society to a policy of quarantining. Each of these corollaries are examined next.

Is deviant peer influence strong? To be sure, peer relations research has revealed the strength of influence that deviant peers have over deviant behavior among high-risk adolescents (Dodge, Dishion, & Lansford, 2006). When adolescents join gangs, their deviant behavior increases, and when they leave gangs, their deviant behavior subsides (Thornberry, Krohn, Lizotte, Smith, & Tobin, 2003). Furthermore, deviant peer influence processes operate not only in self-selected groups, but also in groups that are formed by exogenous attempts to intervene. *Deviancy training*, as coined by Dishion and Andrews (1995), occurs in mental health therapy groups for high-risk adolescents (Dishion & Andrews, 1995), school settings (Gottfredson, 1987), and correctional facilities (Bayer, Pintoff, & Pozen, 2004). Bayer et al. (2004) found that incarcerated juveniles increased their postincarceration offending as a function of both prior offending levels by their cell mates and the specific type of offending by their cell mates.

A meta-analysis by Lipsey (2006) found that prevention programs for young first-time juvenile offenders, when administered in an all-deviant peer-group context, yielded outcomes that were about one third less effective than similar intervention programs administered individually. Furthermore, one third of all evaluated prevention programs yielded adverse effect sizes. Ang and Hughes (2002) similarly found that social skills training interventions for school children yielded outcomes that were, on average, one third less effective when administered in all-deviant peer groups than when administered individually.

An important caveat here is that not all youths are equally influenced by deviant peers (Dodge & Sherrill, 2006). In fact, no evidence exists to support the hypothesis that previously nondeviant youths initiate deviant behavior for the first time as a function of exposure to deviant peers. Likewise, deviant youths whose behavior is well-established do not increase their deviance with placement among deviant peers. The group that is most at risk of being influenced by deviant peers is a set of modestly deviant youths who have initiated deviance but have not yet fully committed to this lifestyle. They are influenced by placement with slightly older, slightly more deviant peers who are viewed favorably.

No evidence exists that classrooms of nondeviant students are made safer by exclusion of moderately or intermittently deviant peers. Nondeviant students are not influenced by the effects of exposure to more deviant peers as long as the culture in the classroom setting remains prosocial. It is the moderately deviant students who are most susceptible to peer influences in either direction. Ironically, current policies adversely affect these students the most, through zero tolerance for weapon carrying or fighting and in-school suspension, whereby first-time offenders are segregated from the regular classroom and placed with other offenders. Several years ago, the governor of Illinois signed legislation requiring public schools to use a proven-ineffective deviant peer-aggregation program, Scared Straight, with all high-risk youths who were first time offenders (Sherman & Strang, 2004). North Carolina now mandates

that all of its 115 public school districts have access to an alternative school for placing moderately deviant youths.

Is deviant peer influence asymmetric?

The assertion behind the policy of quarantining is that influence is asymmetric: Deviant youths influence nondeviant youths to become deviant while not being influenced to become prosocial. Several studies have challenged this assertion. Feldman, Caplinger, and Wodarski (1983) randomly assigned high- and low-risk boys to three kinds of groups for intervention: high risk only, low risk only, and mixed high and low risk. At the end of the intervention, high-risk boys from mixed groups performed better than high-risk boys from all high-risk groups, indicating the potentially favorable impact of low-risk boys on the adjustment of high-risk boys. Also, low-risk boys in mixed groups performed as well as low-risk boys in low-risk only groups, indicating that low-risk boys are apparently not adversely affected in their adjustment by high-risk boys.

Boxer, Guerra, Huesmann, and Morales (2005) randomly assigned moderate- and high-risk elementary school children to participate in peer group intervention and found a tendency for the highest risk children to be influenced positively toward the behavior levels of children with more modest risk levels, whereas the children with modest risk levels were influenced adversely toward the deviant behavior of the highest risk peers. A review by Dodge and Sherrill (2006) concluded that nondeviant children are not adversely affected by contact with deviant peers, that initially modestly deviant children are most susceptible to deviant peer influences, and that highly deviant peers might benefit from interaction with less deviant peers. This pattern certainly does not support the need to quarantine modestly deviant youths.

Does deviant peer influence apply in all situations?

One of the major findings of the Duke Executive Sessions in Deviant Peer Influences (Dodge, Dishion, & Lansford, 2006) was that deviant peer influences in intervention programs can be mitigated through a variety of means. First, as noted earlier, the youths who are most susceptible to deviant peer influence are early-adolescent boys who have begun a trajectory of deviant behavior but have not become so committed to that lifestyle as to be impervious to change (Dodge & Sherrill, 2006). These youths should be held out of deviant peer group interventions altogether. Second, matching deviant youths with slightly older, slightly more deviant peers is particularly problematic, and so these placements should be avoided. Third, deviant youths should not be placed with peers with similar behavior profiles (e.g., drug users should not be matched with drug users). Training schools and prisons should not match similar youths from the same communities in the same living units, because they risk exacerbating crime development in these youths (Bayer et al., 2004).

Is there a net benefit to society to a policy of quarantining?

Even though quarantining deviant adolescents might prove harmful to those adolescents, it is still plausible that it provides a net benefit to society, if the effect on the rest of the population is positive, that is, if the

nonquarantined population is safer and better able to prosper without the threat of deviant youths in their midst. There is no evidence to support this hypothesis, nor is there evidence to refute it. Cook and Ludwig (2006) provided a useful template for conceptualizing overall effects of quarantine policies, and future studies should address this hypothesis.

Man (Woman) as Rational Computer

At the opposite end of the continuum from classifying chronically violent youths as diseased or defective is the rational-choice model of human criminal behavior (Cornish & Clarke, 1986), which is a specification of broader rational-choice theories of human behavior. The metaphor of man (woman) as rational computer asserts that a violent behavior occurs because the external contingencies favor it. The violent youth mentally asks and answers questions such as the following: "Will there be any negative consequences if I hit another person?" "What is the best time of day to rob a store?" "Will I get away without punishment if I retaliate aggressively?" When these questions are answered favorably, violent behavior ensues. The cause of violent behavior, according to this model, is not defective thinking by the violent person but an environment that has been structured to allow, or even endorse, deviant behavior. Prevention of violent behavior is possible, but the environment itself must be restructured.

This metaphor has many attractive features. For example, violent youths are not labeled as the cause of the problem or as defective, and specific features of the environment can be identified for intervention (such as a location where most crimes occur). It is widely accepted by academics from several disciplines, notably economics and criminology, who can readily assimilate the rational construct into their schemas about the world. Cook (1976) offered cogent empirical analyses that robbery varies rationally as a function of environmental incentives and the prospects of punishment. The model has not fully taken hold with the public, however, because people have a difficult time accepting that they too would act violently if placed in the same situation and life circumstances as the criminal. Furthermore, it has not proven very helpful in understanding individual differences in violent behavior, because it assumes that all persons would act in an identical manner under similar circumstances. Civilized environments do constrain most individuals from behaving violently, and so it is difficult to contemplate additional changes in the environment that would prevent violent behavior by the rest of society.

This metaphor also fails to incorporate the nonrational behavior of human beings, both behaviors caused by psychopathology and those caused by universal human processes (Tversky & Kahneman, 1986). Kahneman, a psychologist, addressed normative nonrational decision making, which won him the Nobel Prize and has spawned the fledgling fields of behavioral economics and neuroeconomics. The metaphor of man as rational being and computer is not entirely consistent with these perspectives.

Corrective Surgery for Defects

Yet another metaphor is that a violent child's defect can be corrected through surgical intervention. Indeed, multisystemic therapy (Henggeler et al., 1998) and functional family therapy (Alexander & Parsons, 1982) might be thought of as the corrective surgery of violence prevention because they deploy massive resources over a short period of time to stop a rapidly escalating process of violent behavior. Newt Gingrich alluded to a similar model of sickness and corrective surgery when he proposed that society needs more "orphanages for high-risk youth" (Gingrich, 1994, p. A1). He stated,

How a mother can kill her two children, 14 months and 3 years, in hopes that her boyfriend would like her, is just a sign of how *sick* [italics added] the system is and I think the people want to change. The only way you get change is to vote Republican. (Gingrich, 1994, p. A1)

The assumption here is that a sickness in the child or the environment must be ameliorated through drastic intervention, such as out-of-home placement.

Intervention science has demonstrated that emergency surgical intervention directed at the child or the environment has most merit for seriously affected youths who face imminent incarceration (Henggeler et al., 1998). Its utility as part of a comprehensive continuum of services need not imply a sickness or injury model or an assumption of inherent defect, however. Furthermore, this model does not address treatment for less drastic cases (Kazdin, 2005) or preventive interventions (CPPRG, 1999). Thus, the injury-surgery metaphor has not captured the public's endorsement because it is too limited. More comprehensive models that are more plausible and consistent with empirical findings are needed.

The Vaccine for Violence Prevention

Johnson was not the first person to invoke the metaphor of a vaccine for the prevention of violent behavior (National Institutes of Health, 2005). Embry (2002) reported favorable effects of a classroom-based intervention to prevent conduct problems, called the Good Behavior Game, which he labeled a "universal behavioral vaccine" (p. 273). This approach engages all the children in a classroom in positive behaviors for group rewards. When implemented in first-grade classrooms in randomized trials, it was proven efficacious in reducing disruptive behavior at both proximal (Ialongo et al., 1999) and distal (Ialongo, Poduska, Werthamer, & Kellam, 2001) times. Van Lier, Muthén, van der Sar, and Crijnen (2004) found that these positive effects could be sustained across 24 months and were strongest for the most disruptive children.

A vaccine model asserts several propositions that, if true, would be heralded by the public, which has seen polio and other diseases extinguished by vaccines. First, it suggests that a single environmental pathogen or a small set of pathogens attacks the organism and has an enduring adverse impact on outcomes. Further, it suggests that an agent (the vaccine) can be administered that will enable the

organism to resist future threats for some period after exposure to the vaccine. Thus, the metaphor locates the disease inside the self but articulates a developmental model that could be exploited to prevent the disease from occurring. The preventive intervention is a one-time, early, universal intervention. For Embry (2002), the vaccine is delivered at the classroom level.

If such a vaccine could be proven effective, its utility would be tremendous. Analysis of the implementation of prevention programs in schools indicates that this metaphor enjoyed public and policy success in the late 1980s and early 1990s, when the majority of public schools in the United States implemented short-term, vaccinelike programs such as D.A.R.E. (Ringwalt et al., 1994). The 12-session D.A.R.E. program enjoyed unprecedented marketing: It was implemented in over 85% of all public middle schools. Employing police officers to visit fifth-grade classrooms to deliver antidrug and antiviolence messages rang true for middle America's perception of the problem. This metaphor received strong popular support most likely because it was consistent with the public's stereotype that violence is an infectious sickness that grows during adolescence and because it suggested that this very costly sickness could be prevented with inexpensive and noncomplicated measures that could be delivered universally.

Unfortunately, empirical evidence does not support the hypothesis that a single, early dose of preventive intervention has life-lasting effects. Consensus models (Dodge, Coie, & Lynam, 2006; Dodge & Pettit, 2003) suggest that chronic violence is the product of not one but a multitude of independent external pathogens that operate at many levels, including the ambient cultural environment, the neighborhood, the family, the peer group, and the school (Greenberg, Lengua, Coie, Pinderhughes, & the CPPRG, 1999) and at different points in life (Dodge & Pettit, 2003). Factors cumulate, and a multifactorial risk model has received the strongest empirical support (Deater-Deckard, Dodge, Bates, & Pettit, 1998; Greenberg et al., 1999). Prophylactic intervention early in life to protect a child from one set of pathogens might be successful, but the diverse range in pathogens and the broad age range at which the child is exposed to these pathogens make it highly unlikely that a single, short-term intervention can protect a child from all future risk factors. If the vaccine metaphor were to be extended, one would conclude that, as with influenza, too many variant strains exist to allow use of a single vaccine at this time. Furthermore, environmental pathogens interact with the child's own genetic vulnerabilities (Caspi et al., 2002) and exert different impact at different points in development.

On the intervention side, numerous randomized prevention trials indicate that short-term, one-shot (like a vaccine injection) programs, such as D.A.R.E. (Ringwalt et al., 1994), short-term skills-training groups for elementary school children (Metropolitan Area Child Study Research Group, 2002), and short-term parent-training groups (Kazdin, 2003) have, at best, short-term success but no long-lasting impact on the child's antisocial development. In spite of this sobering evidence, these programs are

common practice in schools and mental health settings. These programs might have positive impact if it could be proven that combining multiple efficacious programs across domains and across development could cumulate to exert lasting impact. Consistent with this idea, the vaccine metaphor continues with programs that advocate booster shots in years after the initial intervention has been delivered (Botvin, 2000).

Unfortunately, the vaccine metaphor has promoted the opposite public policy in schools, because it rationalizes dropping multiple programs over time in favor of delivering just one program at a single time. That is, a vaccine metaphor implies that a one-shot early intervention (like one shot of vaccine) is sufficient to have lasting impact, without the need for a comprehensive set of integrated programs. The empirical evidence indicates that the utility of this metaphor in school policy is misguided because it misleads the public into believing that enough is being done to protect children as they grow up.

Chronic Violence as Chronic Disease

Yet another metaphor is that conduct disorder is a chronic disease that has its onset early in life as a function of a combination of dispositional and environmental factors (Kazdin, 2003). Forms of the disease include a propensity to hyperreact to perceived threat with extreme aggression and an inability to modulate aggressive responses in the presence of punishment. This metaphor implies that treatment must consist of perpetual case management coupled with more intensive therapies when the disease flares up. Such a conceptualization casts intervention efforts more as disease control and harm reduction than as prevention and is likely to exacerbate stereotypes about the race–violence correlation and the imperviousness of this condition to change.

The origins of other psychopathological disorders, such as depressive disorder, have been theorized through a diathesis–stress model that posits an inherent diathesis that is perturbed into disorder under conditions of environmental stress. Conduct disorder might be similarly conceptualized, with the diathesis being a genetic or biologically based propensity for extreme reactivity to threat and the stressor being environmental maltreatment or provocation. This conceptualization asserts that the hostile environment is a stressor that operates on a person-specific vulnerability. The interaction effects found by Caspi et al. (2002) support such a model, even to the degree that the diathesis, a functional polymorphism in the promoter of the monoamine oxidase–A gene, has been found to mediate neural responses to environmental threat and stress (Morell, 1993). Common behavioral responses to physical maltreatment include hypervigilance, hostile attributional bias, and emotion dysregulation (Dodge, Bates, & Pettit, 1990). When these responses do not dissipate under conditions of a safe environment, as they normally would in most of the population, chronic violence ensues (Lansford et al., 2002).

The implications of this metaphor are far reaching. Research and prevention efforts might be directed toward further identification and amelioration of the diathesis. Em-

phasis might be placed on removing child-specific environmental stressors, and high-risk children might be targeted for enhancement of skills involved in the regulation of stress in order to strengthen their resistance. Supporting this model is developmental evidence indicating that, even though some early-starting, high-risk children remit from their deviant behavior, stability of this pattern is strong, especially among the most extremely deviant children (Dodge, Coie, & Lynam, 2006). Furthermore, children with conduct problems are the most likely to react adversely under new stressful conditions, suggesting an underlying vulnerability that is carried with them throughout life. Finally, no longitudinal evidence has yet accumulated to show that individual children who are diagnosed with a conduct disorder ever permanently remit from this condition. However, a frame analysis indicates that this approach has not yet caught the attention of most conduct disorder researchers, practitioners, or policymakers.

The implications of this model are that preventive interventions might be reoriented toward helping parents and their children cope with an ongoing vulnerability to react aggressively to adversity. Interventions might involve long-term attempts to structure the environment to avoid threat, to help parents refrain from overreaction to a high-risk child's misbehavior, and to teach high-risk children to recognize stimuli that lead them to overreact so that those stimuli can be avoided. The closest example of a long-term intervention that is consistent with this model is the Fast Track Program, which identifies early-starting 5-year-olds and delivers developmentally based interventions across a 10-year period. Outcome evaluation from a randomized trial indicates that this approach can reduce the probability of chronic conduct problems among high-risk youths (CPPRG, 2007).

A major challenge with this metaphor is that it has the potential to perpetuate the stereotype that youths with conduct disorders are inherently defective; thus, it could inadvertently exacerbate their risk through self-fulfilling prophecies. Marketing would have to emphasize the positive. This metaphor has not received major public support, as evidenced by the lack of public funding for such efforts.

New Metaphors for the Prevention of Chronic Violence

The remainder of this article is devoted to positing four new metaphors for the problem of chronic youth violence. These new metaphors imply models that posit constructs, values, and relevant causal structures that may be effective in reframing the discourse on preventing chronic violence among youths. The metaphors have not been tested fully yet. The goal here is to instigate innovative research by developmental and prevention scientists and to examine whether the metaphors could inspire the public to think differently about this problem.

Chronic Violence as Dental Caries: A Preventive System of Care as the Solution

The health care model of preventive dentistry offers a novel metaphor for understanding chronic violence. One hundred

years ago, this nation confronted a population-wide problem with dental caries (precavities) and sought a comprehensive preventive solution based on an understanding of how dental caries develop and could be prevented. The result is a true continuum of care in preventive dentistry that includes multiple levels. At the universal policy level, fluoride is now routinely added to the water supply. At the cultural level, the value of preventive care is generally accepted (albeit, practice lags). Standard care in families includes brushing and flossing one's teeth every day. Regular check-ups with a professional diagnostician supplement individual practice in order to identify early signs of problem development so that early preventive intervention can be provided (fillings, cleaning, etc.). At the extreme, corrective surgery or similar interventions (e.g., braces) are applied to alter problem trajectories.

In violence prevention, the Centers for Disease Control and Prevention (CDC) has adopted the public health model, which spans epidemiology, prevention research, translation, and community dissemination of effective intervention strategies. It has the attractive features of conjuring hope that violence can be prevented (just like tooth decay), that comprehensive efforts at multiple efforts will be necessary, and that such efforts are possible in U.S. society.

Developmental science findings are mostly consistent with this model. Specifically, chronic antisocial behavior develops as a function of an ecological system with multiple levels of influence that include policy, culture, family, school, peers, and the self (Chamberlain, 2003; Dodge, Coie, & Lynam, 2006; Huesmann, 1988). Factors at these multiple levels contribute uniquely to the prediction of violence, and interaction effects, especially across levels, contribute still more variance to an exhaustive account of the phenomenon (e.g., Caspi et al., 2002). Although the problem of antisocial behavior is universally present at all ages (with spikes in frequency during toddlerhood and in severity during adolescence; Dodge, Coie, & Lynam, 2006; Tremblay et al., 1999), a subgroup of youths called early starters suffer more serious and persistent problems of violence (Moffitt, 1993).

With regard to prevention, an at-scale demonstration of a comprehensive public health approach has not yet been attempted, but one could contemplate a preventive system of care (Dodge et al., 2003) in which hazardous toxins, such as media violence and easy access to deadly weapons, are well regulated and removed from the water supply available to children. From conception onward, families could be encouraged to create safe environments for their children and to practice parenting strategies, such as contingent praise and time out, which have been found to be effective without producing aggressogenic side effects. Family practitioners could be trained to use regular check-ups as opportunities to identify risk factors and early signs of conduct problems in order to implement early-intervention strategies. Finally, when problems become extreme, "corrective surgery" could be applied.

The public-health, preventive dentistry model succeeds only when interventions are applied simultaneously

at multiple levels. The preventive system of care must include multiple components delivered across multiple developmental periods (Tolan & Dodge, 2005), coupled with a massive public campaign to set into place the intervention services and public will that are necessary for this approach to succeed. This public campaign should be preceded by marketing research and analysis, to see whether the metaphor of preventive dentistry successfully accesses supportive schemas in the public domain. Recent willingness-to-pay experiments have indicated that the public is ready to endorse and fund comprehensive programs to prevent violence if solid evidence of efficacy is provided (Cohen et al., 2004).

Even if the metaphor proves scientifically valid, there are potential problems with the public's acceptance of the preventive dentistry metaphor. The metaphor might appear to trivialize violence as being nothing more than dental caries, and so the public might reject assimilation of this schema. Communications research is needed to test listeners' reactions to this metaphor.

The research that lies ahead is clear. Developmental scientists adopting this metaphor should recast analyses of longitudinal effects of early risk factors on violence outcomes away from mere regression coefficients and toward effect sizes, critical cutoff markers for high-risk cases, and identification of life experiences that deflect trajectories of antisocial development. Prevention scientists should implement randomized trials to evaluate the synergistic effects of coupling interventions at different levels (e.g., a universal component coupled with indicated components across time). Public health scientists should implement a comprehensive preventive system of care in a limited number of communities, as demonstrations of the feasibility of the model and as case studies of effectiveness. Communications researchers should test the public's reaction to the preventive dentistry metaphor for framing the problem of violence prevention through marketing research and willingness-to-pay experiments.

Chronic Violence as Cardiovascular Disease: Disease Prevention as the Solution

Perhaps an even more apt and inspiring metaphor for the development and prevention of chronic violence comes from the medical concepts of syndromes and disorders and the example of cardiovascular disease. The history of discovery for many medical disorders conforms to a pattern of (a) initial identification of a collection of symptoms, called a syndrome, (b) pursuit of the single causal process that comes to operationally define the disorder, and then (c) discovery of a way to interrupt that causal process. This pattern characterizes the past 25 years of research in HIV/AIDS, for which the syndrome (AIDS) was first identified epidemiologically, and then the causal agent (HIV) was discovered, and now a vaccine for that agent is being pursued and will probably lead to the Nobel Prize for the discoverer of the first effective and practical vaccine.

Heart disease, in contrast, does not follow this model. Rather, it is a loose collection of symptoms connected by a common dramatic end product of a myocardial infarction.

It is the same with juvenile conduct disorder and adult antisocial personality disorder, which are characterized by a loose collection of symptoms that may not truly qualify as a single coherent disorder (just like cardiovascular disease is not a single coherent disorder) but that occasionally lead to the dramatic outcome of homicide. Models of the etiology of cardiovascular disease include (a) distal risk factors, which lead to (b) proximal processes, which lead to (c) myocardial infarct or death. This disease is known to follow the principles of *equifinality*, such that the disease can occur through any of several diverse pathways, and *multifinality*, such that the same distal risk factors for heart disease are also risk factors for other disorders. Distal risk factors for heart disease include family history, smoking, poor diet, lack of exercise, chronic high stress, and high blood pressure. Any of these distal risk factors can eventuate in heart disease (thus, equifinality). These same factors are known to increase risk for cancers, diabetes, and other diseases (thus, multifinality). Distal risk is often marked by high blood pressure, operationalized as systolic or diastolic blood pressure levels above an arbitrary level. The cutoff level of risk is arbitrary because the most accurate model is one of linear association between blood pressure and risk in a continuous model. Proximal processes in cardiovascular disease often involve plaque buildup and constriction of blood flow in arteries. These processes are correlated with previously occurring distal risk factors and mediate the effect of those risk factors on outcomes such as a myocardial infarction.

The link between distal risk factors and future heart disease is probabilistic but sufficient to suggest long-term prevention strategies (e.g., changes in diet, increased exercise, medications to reduce blood pressure) that are now standard preventive care for high-risk individuals. The efficacy of those prevention strategies is currently not supported by empirical findings of a reduction in myocardial infarctions; rather, blood pressure control and weight loss are viewed as sufficient outcomes because of the strong theoretical and empirical link between blood pressure/weight and later infarct.

Standard care in cardiovascular disease prevention is a continuum of responses, including universal, selective, and indicated components (Institute of Medicine, 1994). Universal public interventions include policies to persuade fast-food restaurants to lower fat content in foods, laws to disallow smoking in public places, and public service announcements to promote exercise. At the selective level, individual assessment of risk factors and monitoring of blood pressure and weight are coupled with individual behavioral attempts to increase exercise, decrease weight, decrease smoking, and decrease stress and with pharmacological attempts to lower blood pressure. Preventive intervention at the indicated level might include emergency coronary bypass surgery. Epidemiology and prevention science have proceeded hand in hand to produce today's continuum of care in cardiovascular health care.

Adoption of the cardiovascular disease metaphor would lead to changes in the ways that the science of violence prevention is conducted. For example, at the re-

cent National Institutes of Health State-of-the-Science Conference on Prevention of Violence, the panel required empirical evidence of a direct link between a distal prevention strategy and reduction in severe violence outcomes before it would consider such an intervention strategy as relevant. Many promising strategies, including parenting interventions for toddlers and classroom curricula in social-emotional development, were excluded from consideration because violence outcomes had not been measured in several years of postintervention follow-up. The cardiovascular disease metaphor suggests a different strategy for judging violence prevention efforts. As risk factors and causal processes for chronic violence become identified through epidemiological research, prevention strategies would be judged initially not by evidence of violence prevention but by their efficacy in altering relevant distal developmental processes. The most likely candidates for malleable risk factors among elementary school children that probably play a causal role in young-adult chronic violence include executive function skill deficits, parental physical maltreatment, dysfunctional social-information-processing patterns, social incompetence, and peer conflict (Dodge, Coie, & Lynam, 2006). Interventions that address these factors should be considered pertinent to the violence-prevention field.

The cardiovascular disease metaphor also allows inclusion of emergency corrective procedures in a comprehensive preventive system of care. Intensive interventions, such as multisystemic therapy (Henggeler et al., 1998) and treatment foster care (Chamberlain, 2003), are the coronary bypass surgeries of violence prevention, with strong empirical support for their efficacy in preventing serious outcomes among critical cases, at least in the short term. Economic analyses must evaluate the return to investment in long-term, less expensive prevention strategies versus intensive emergency care. Nonetheless, a comprehensive public health plan to prevent chronic violence is likely to include a continuum of intervention tools that span distal risk factors and proximal processes. Just as progress in the prevention of heart attacks has required a collaboration among developmental epidemiology, internal medicine, and public health, progress in the prevention of chronic violence will require active participation and collaboration among developmental psychopathology, prevention science, and public policy analysis. The metaphor of cardiovascular disease prevention could inspire the creation of this dynamic relationship among disciplines in youth chronic violence.

There are potential problems with this metaphor. The notion of violence as disease locates the phenomenon within the individual rather than society. Even though society might be implicated as the source of the individual's disease, personal responsibility is implied and could prove politically controversial. Likewise, this notion frames violent behavior as always maladaptive. Disease connotes aberration rather than an adaptive reaction to an adverse set of circumstances.

Framing the Problem in a Public Health Model: Injury Prevention as the Solution

In her policy analysis of the gun-control movement in America, Goss (2006) wrote that any successful popular campaign must “socialize the costs” (p. 9) and “individualize the benefits” (p. 9) through framing. She argued that the popularity of gun control grew when the focus shifted away from the person who wants to own a gun to the child who is the victim of a gun shot. It is much easier to mobilize sympathy for a child who is at risk of being killed by a gun than for a child who is at risk for becoming the perpetrator of gun violence. As precedent, the popularity and success of the antismoking movement in America grew as the frame shifted away from the benefits to the person who smokes and toward the benefits that would accrue to nonsmokers who now suffer the ill effects of secondhand smoke. Likewise, the modern antialcohol movement grew when the National Highway Traffic Safety Administration “became the major institutional advocate of the drunk-driving frame” (McCarthy, 1994, p. 139) and provided a \$65,000 seed grant to Mothers Against Drunk Driving to establish a national network that framed the goal as preventing deaths to children rather than treating alcoholism (Reinarman & Levine, 1989).

The CDC has followed these principles to reframe the problem of youth violence away from one of punishment and toward that of a public health problem. It cast violence as a problem that has a detrimental impact on the nation’s health through its influence on injury and other mental and physical health outcomes and as a problem that can be prevented (Mercy & Hammond, 1999). The CDC has shifted the focus toward one of injury prevention through its National Center for Injury Prevention and Control and its Public Health Injury Surveillance and Prevention Program. This public health framing of the goal of preventing innocent persons from being harmed, rather than of preventing youths from becoming chronic harmers of others, has enabled the CDC to grow in funding and support. A personal anecdote about Senator Jesse Helms depicts this point. A while back, when I submitted a service grant application to the CDC, I asked Senator Helms’s office for a letter of support for a project that would benefit citizens of his home state of North Carolina. He replied cynically about the motives of the CDC by stating that he would not support any organization or action that would advocate gun control. When I reassured him that the project and the CDC were merely trying to protect innocent children from being harmed by violence, he consented and wrote a supportive letter.

The CDC public health model represents a major new approach to youth violence prevention. This model is characterized by “epidemiological surveillance of the health of the population at large, health promotion, disease prevention, and access to and evaluation of services” as well as the widespread dissemination and implementation of evidence-based prevention strategies (U.S. Department of Health and Human Services, 1999). Surveillance measures the incidence of the disease, its location geographically,

and its subgroups (for maps of victimization by homicide, see the CDC Web site: <http://www.cdc.gov/ncipc/maps/default.htm>) and allows analysis of the economic burden of violence to taxpayers and study of the etiology of victimization. Interventions span the stages of the course of the disease, from primary prevention to tertiary care, and include protections for potential victims (e.g., programs to prevent youth violence have been framed as antibullying programs to protect innocent peers).

The CDC public health model brings the comprehensiveness of a population-level approach and the rigorous methods and large infrastructure of the public health field. It may continue to suffer if the frame invokes schemas of the perpetrator as having a disease.

Chronic Violence as Illiteracy: Public Education and Social Marketing as the Solution

The final metaphor to be considered is the prevention of illiteracy through public education and social environmental engineering. This metaphor calls to mind the most comprehensive and successful public policy toward children in history. As the American economy turned away from farming and toward industry in the 1800s, government leaders came to support universal public education as the most effective way to produce literate adults who could execute the experiment called democracy and assume positions in the new workforce (Lagemann, 2000). Theorists such as G. Stanley Hall and John Dewey asserted that literacy develops and illiteracy is not a defect or a sin (Lagemann, 2000), thus defeating any attempts to invoke a metaphor of moral defect in the debate about illiteracy. Children progress from illiteracy to literacy through teaching by external agents. The scope of public education expanded to include longer school days, more years, and high school (Hall, 1923). Today, that expansion continues, with efforts to promote universal preschool. Special education was instituted as a supplement for children with extreme problems that could not be accommodated in the regular classroom (Hall, 1923). The current comprehensive system of public education reaches to very young ages and is continuous through early adulthood, it includes both universal aspects and tailoring for child-specific needs, and it is based (increasingly) on a science of cognitive development and empirical testing. Philosophically, we understand that even though genetic characteristics may differentiate intelligence levels, every child requires many years of schooling to become literate. The public interest necessitates government expenditures, laws mandating school attendance, public support, and family partnerships.

Literacy depends not only on public expenditures in education and government policy but also on societal commitment through its investment of social capital. A popular social marketing campaign today is the phrase, *America Reads*, which is localized to communities, employers, and organizations. The message is that the community supports literacy development. This grass roots support is crucial.

Although our society would not deny a child access to public education and then incarcerate him or her at age 18

for being illiterate, and we would not characterize illiteracy as a moral sin worthy of penance, we fail to see the folly in denying a child access to appropriate instruction and opportunities for learning self-regulation and then holding him or her responsible for incompetent behavior that results in a violent act in young adulthood. The proposed model is that, indeed, chronic violence should be conceptualized as social incompetence that is a failure of society to educate. Therefore, one could contemplate a comprehensive system of education and social marketing to prevent chronic violence. This system has both a systematic government policy of public education and a societal commitment through social capital investment.

Developmental and prevention science findings are consistent with the education model of antisocial behavioral development. In elementary school, aggressive behavior and other indicators of social incompetence are highly correlated (Dodge, Pettit, McClaskey, & Brown, 1986). Aggressive behavior problems have been found to grow as a function of deficits in social-cognitive skills, including facility in recognizing and decoding emotions in the self and others, interpreting social actions of others accurately and benignly, solving social problems in nonviolent and effective ways, anticipating consequences of one's own behavior, regulating one's own impulses long enough to weigh the consequences of one's actions, and valuing outcomes that foster the public good (Dodge, Coie, & Lynam, 2006; Dodge & Pettit, 2003). These skill deficits, in turn, grow as a result of a combination of biologically based neuropsychological deficits (Moffitt, 1993), adverse early life experiences such as poverty and maltreatment (Dodge et al., 1990), and their interaction (Caspi et al., 2002). Randomized trials of interventions to improve social-cognitive skills have yielded favorable impact on deflecting trajectories of antisocial development among high-risk youths (CPPRG, 2004; Tremblay, Pagani-Kurtz, Masse, Vitaro, & Pihl, 1995), and mediation tests support the hypothesis that intervention effects on antisocial outcomes are mediated by effects on social-cognitive skills (CPPRG, 2002b).

Community support for violence prevention (and intolerance of violent behavior) has also been found empirically to influence antisocial development. Cultural norms along with local laws restricting gun ownership have dramatic effects on rates at which children die from firearm homicide (Miller, Azrael, & Hemenway, 2002). Nisbett and Cohen (1996) found that a *culture of honor* is responsible for consistently higher rates of violence in the American South than in other geographic regions. Votruba and Kling (2004) analyzed data from the Gautreaux Program in Chicago and found that mortality of African American male youths (mainly by violence) varied as a function of neighborhood characteristics related to human capital and work, such as unemployment rates and levels of education among the adults in the neighborhood. Finally, Sampson, Raudenbush, and Earls (1997) found that neighborhood social capital and collective efficacy buffer children from antisocial behavioral development.

Putting into place a comprehensive system of social competence education and social marketing should start with many years of incremental schooling in the skills that have been found to be necessary to interact competently in today's social world. These skills can be taught and learned, but they cannot be mastered in a brief 12-session program taught by volunteers, such as the D.A.R.E. program (Ringwalt et al., 1994) or other short-term violence-prevention programs used in most of today's middle schools. Rather, a prekindergarten through Grade 12 system of social competence education may be necessary to prevent violence in the next generation (Weissberg, 2005). Furthermore, the proposed system of instruction in character education would not merely be one of spelling value traits, such as honesty and responsibility, and placing them on school bulletin boards, as now occurs in many third-grade classrooms; rather, the system should be based on the developmental science of social competence. Student progress could be as rigorously measured and practitioners could be held as accountable as they are in today's end-of-grade testing practices in reading and mathematics. As in education for reading, a comprehensive system of social competence education should supplement universal education with intensive education for children found to be deficient in social-cognitive skills and at high risk for later failure. Also as in academic education, the proposed system presupposes parental support and community collaboration (e.g., after-school programs, extracurricular activities, and media exposure) and relies on public expenditures and policies to support interventions.

A frame analysis suggests that the public's infatuation with end-of-grade testing in reading and math should not be interpreted as a lack of interest in social competence or violence prevention (Cohen et al., 2004); rather, it should be interpreted as endorsement of standards and accountability in education. Doubts about character education are well founded and should challenge social developmental scientists to improve the measurement of social skills and should challenge prevention scientists to improve comprehensive interventions and their evaluation. When multi-level social competence interventions have been implemented and evaluated rigorously, evidence supports their economic cost-effectiveness in preventing antisocial outcomes among the highest risk youths (Foster, Jones, & CPPRG, 2006). When confronted with rigorous evidence, the public will act responsibly. As an example, through leadership by Roger Weissberg (of the Collaborative for Academic, Social, and Emotional Learning; see <http://www.casel.org/home/index.php>), the legislature of the State of Illinois recently passed Public Act 93-0495 (Children's Mental Health Act of 2003), which calls on the Illinois State Board of Education to "develop and implement a plan to incorporate social and emotional development standards as part of the Illinois Learning Standards" (Section 15a).

Shriver and Weissberg (2005) recently pointed out that the choice between academic and social-emotional learning is actually a false one because these types of learning support each other across development. "Promoting students' social and emotional skills plays a critical role

in improving their academic performance” (Shriver & Weissberg, 2005, p. A15). Weissberg (2005) reported the findings of a synthesis of 300 studies that concluded that social and emotional learning programs significantly improve students’ academic performance. An average student enrolled in a social and emotional learning program ranks at least 10% higher on achievement tests than students who do not participate in such programs.

Just as the current system of promoting literacy goes beyond regular classroom curricula, a comprehensive education system in chronic violence prevention would go well beyond universal classroom instruction to include specialized resource allocation for high-risk youths; accommodation of cultural differences; partnerships with the family, community, and media; and improved professional training for educators. It would require a cultural shift in acceptance of the community and school roles in helping children to grow up to become nonviolent citizens, and it would require a philosophical shift in understanding violent behavior as a developmental outcome rather than merely as a moral mistake. Treatment of alcoholism took a major step forward when it was recast as a disease rather than a moral failure. Recasting chronic violence as a failure in education rather than a moral depravity worthy of the death sentence could open opportunities for carefully planned and sustained intervention in early life. Likewise, just as literacy is now recognized as the partial responsibility of the public (although the individual and family accept responsibility, too), violence prevention must be recognized as a societal responsibility (without allowing the individual to abdicate self-responsibility, of course).

Would a comprehensive, multicomponent effort to educate children in social competence and nonviolence be effective in reducing societal rates of chronic violence? Several attempts to structure schools to educate children in social competence have been found to yield promising universal-level results (Comer, 1997; CPPRG, 1999), but much more evidence is needed. Will society embrace the communal responsibility implied in an education model for violence prevention? It is ironic that, in this day of increased focus on academic skills in schools, the original goal of public education has been forgotten. In colonial times and the early period of American freedom, the concept grew that schools should be supported with public funds, not for the sake of literacy education, but so that children could grow up to become competent enough to participate in a communal society and to vote in the new experiment called a democracy. Comprehensive educational programs to promote social competence and prevent chronic violence are fully consistent with this spirit. Following a legal analysis of American schooling after the Columbine disaster, Coleman (2002) concluded that

the use of schools in the curative roles that are contemplated by these programs is consistent with the function they have served as a means to solidify the commitment to democratic government, to assure the existence of a single American community in the midst of extraordinary pluralism, and to guarantee that the members of this community succeed so that the future of the nation in turn can be secured. (Coleman, 2002, p. 159)

Conclusion: Metaphors as Scientific Hypotheses

The metaphors raised here suggest new approaches to understanding how chronic violence develops and might be prevented in American youths. The language of metaphors allows us to imagine out-of-the-box models and new ways of thinking about a vexing problem. Metaphors enable listeners to grasp complex concepts readily in a sound bite, and thus they can captivate the public, policymakers, and scientists alike. Their power cannot be overestimated.

These metaphors should not be confused with platitudes for public policy, however. Psychologists have recently become enamored with public policy implications of their work and are too often willing to make sweeping recommendations to any legislator or policymaker who will listen. In the early days of the scientist–practitioner model in clinical psychology, scientists made grave mistakes by abandoning their rigorous scientific head in exchange for a silly therapist head that had, at best, only a loose connection to scientific evidence. A similar danger is on the horizon with the making of public policy. When two-headed psychologists forgo scientific rigor in favor of advocating unsupported private values in public policy, they become nothing more than politicians. Even though metaphors have heuristic value as hypotheses for empirical inquiry, they should not be confused with formal scientific models. Metaphorical thinking is sloppy science that must be transformed into testable hypotheses, rigorous analysis, and empirical testing. Through such testing, some metaphors will go beyond the metaphorical and turn into applicable models for human behavior, prevention, and policy.

This case study about discourse in youth violence leads to a broader conclusion about the power and danger of using metaphors to guide scientific research and to persuade the public and policy. When metaphors are inaccurate, they can influence the scientific and policy communities in harmful ways. Even when they are proven to be inaccurate, their influence may endure. When they contain a kernel of scientific truth and connect to listeners’ schemas, they can be catalytic and inspiring. The field of chronic violence prevention certainly could use inspiration.

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