40. T. Kosuge, M. G. Heskett, E. E. Wilson, *J. Biol. Chem.* **241**, 3738 (1966).
41. Y. Maki, S. Yamamoto, M. Nozaki, O. Hayaishi, *Biochem. Biophys. Res. Commun.* **25**, 609 (1966).
42. Y. Maki, S. Yamamoto, M. Nozaki, O. Hayaishi, *J. Biol. Chem.*, in press.
43. M. Katagiri, S. Takemori, K. Suzuki, H. Yasuda, *ibid.* **241**, 5675 (1966).
44. K. Hosokawa and R. Y. Stanier, *ibid.*, p. 2453.
45. H. Yasuda, K. Suzuki, S. Takemori, M. Katagiri, *Biochem. Biophys. Res. Commun.* **28**, 135 (1967).
46. S. Yamamoto, H. Takeda, Y. Maki, O. Hayaishi, in *Biological and Chemical Aspects of Oxygenases*, K. Bloch and O. Hayaishi, Eds. (Maruzen, Japan, 1966), p. 303.
47. J. A. Peterson, D. Basu, M. J. Coon, *J.*

Biol. Chem. **241**, 5162 (1966); J. A. Peterson, M. Kusunose, E. Kusunose, M. J. Coon, *ibid.* **242**, 4334 (1967).
48. T. Kimura and K. Suzuki, *Biochem. Biophys. Res. Commun.* **20**, 373 (1965).
49. J. Nagai and K. Bloch, *J. Biol. Chem.* **241**, 1925 (1966).
50. M. Katagiri, B. Ganguli, I. C. Gunsalus, *Fed. Proc.* **27**, 525 (1968).
51. M. Nozaki, H. Kagamiyama, O. Hayaishi, *Biochem. Z.* **338**, 582 (1963).
52. H. Kita, M. Kamimoto, S. Senoh, K. Adachi, Y. Takeda, *Biochem. Biophys. Res. Commun.* **18**, 66 (1965).
53. K. Adachi, Y. Iwayama, H. Tanioka, Y. Takeda, *Biochim. Biophys. Acta* **118**, 88 (1966).
54. H. Fujisawa and O. Hayaishi, *J. Biol. Chem.* **243**, 2673 (1968).

Violence and Man's Struggle To Adapt

Violence, one form of aggressive behavior, produces maladaptive results in this technological age.

Marshall F. Gilula and David N. Daniels

The need is not really for more brains, the need is now for a gentler, a more tolerant people than those who won for us against the ice, the tiger, and the bear (*1*).

Violence waits in the dusty sunlight of a tenement yard and in the shadows of a distraught mind. Violence draws nearer in the shouts of a protest march and in ghetto rumblings. Violence erupts from Mace-sprinkled billy clubs and a homemade Molotov cocktail. Violence of war explodes the peace it promises to bring. Hourly reports of violence bring numbness, shock, confusion, sorrow. We live in a violent world (*2*).

Violence surrounds us, and we must try to understand it in the hopes of finding alternatives that will meet today's demand for change. Do we benefit from violence? Or is violence losing whatever adaptive value it may once have had? We present two theses. (i) Violence can best be understood in the context of adaptation. Violence is part of a struggle to resolve stressful and threatening events—a struggle to adapt. (ii) Adaptive alternatives to violence are needed in this technological era because the survival value of violent aggression is diminishing rapidly.

The shock of Robert F. Kennedy's

death prompted the formation of a committee on violence (*3*) in the Department of Psychiatry, Stanford University School of Medicine. We committee members reviewed the literature on violence and then interpreted this literature from the point of view of psychiatrists and psychologists. We discussed our readings in seminars and sought answers to our questions about violence. This article presents a synthesis of our group's findings and observations and reflects our view of adaptation theory as a unifying principle in human behavior.

We define pertinent terms and describe the adaptation process before we examine violence as it relates to individual coping behavior and collective survival. We then describe three theories of aggression and relate them to adaptation. Next, we discuss relevant examples of violence as attempted coping behavior and factors that foster violence and illustrate the urgent need for other ways of expressing aggression. Finally, we consider the changing nature of adaptation and suggest ways of coping with violence.

Definition of Terms

Two groups of terms require definition: (i) aggression and violence; and (ii) adaptation, adjustment, and coping. We found that these terms have quite different meanings for different disciplines.

We here define aggression (*4, 5*) as the entire spectrum of assertive, intrusive, and attacking behaviors. Aggression thus includes both overt and covert attacks, such defamatory acts as sarcasm, self-directed attacks, and dominance behavior. We extend aggression to include such assertive behaviors as forceful and determined attempts to master a task or accomplish an act. We choose a broad definition of aggression rather than a restrictive one because relations between the underlying physiological mechanisms and the social correlates of dominant, assertive, and violent behavior are still poorly understood. Hence, our definition encompasses but is broader than the definition of aggression in animals that is used in experimental biology (*6, 7*), which says that an animal acts aggressively when he inflicts, attempts to inflict, or threatens to inflict damage upon another animal. Violence (*4*) is destructive aggression and involves inflicting physical damage on persons or property (since property is so often symbolically equated with the self). Violent inflicting of damage is often intense, uncontrolled, excessive, furious, sudden, or seemingly purposeless. Furthermore, violence may be collective or individual, intentional or unintentional, apparently just or unjust.

By adaptation we mean the behavioral and biological fit between the species and the environment resulting

Dr. Gilula is resident in psychiatry and Dr. Daniels is assistant professor of psychiatry, Stanford University School of Medicine, Stanford, California 94305.

from the process of natural selection (8, 9). In man, adaptation increasingly involves modifying the environment as well. Here we want to stress that behavior, especially group-living behavior in higher social species like man, is a crucial element in natural selection (10). Adaptive behaviors are those that enhance species survival and, in most instances, individual survival. In contrast, we define adjustment as behavior of a group or individual that temporarily enhances the way we fit with the immediate situation. By definition, adjustment is often a passive rather than active process and does not result in an enduring alteration of behavior structure or patterns (4, 11). In fact, adjustment may have biologically maladaptive consequences in the long run. In addition, rapid environmental change or extraordinary environmental circumstances may render formerly adaptive behaviors largely maladaptive (10), that is, behaviors appropriate to past environmental conditions can work against survival in "new" or unusual environments.

We define coping as the continuing and usually successful struggle to accomplish tasks and goals with adaptive consequences. Put another way: "Behavior may be considered to serve coping functions when it increases the likelihood (from a specified vantage point with respect to a specified time unit) that a task will be accomplished according to standards that are tolerable both to the individual and to the group in which he lives" (12). Whereas each specific sequence of task-oriented behaviors may or may not have adaptive value, coping taken as a whole is an adaptive rather than adjustive human process.

Definition of Human Adaptation

Every culture prescribes the range of coping behaviors available to its people, but within this range individual adaptive behavior is forged and tested in times of stress. Stressful or new situations paradoxically offer us both the danger of failure and the opportunity for learning. Stress can be dangerous when it overwhelms the individual or group. Either the situation itself or unpleasant feelings about the situation (including massive anxiety) may block our usual resources and prevent problem solving, and aggressive reactions that are both indiscriminate and

protective may occur. We may show primitive forms of behavior: passive adjustment, withdrawal, falsely blaming others, indiscriminate rage, violence, or confusion.

Alternately, stressful events provide a constructive challenge and expanded opportunity for learning. In a stressful situation that is not overwhelming, we seek information helpful in dealing with the situation and try to apply this information (13). From information seeking and subsequent exploratory behavior come not only greater use of information and eventual mastery of new situations but also a sense of heightened self-awareness, enhanced coping skills, and personal growth.

A number of commonly occurring stressful life situations that may challenge and develop our coping skills have been recognized (13). These are associated with the transitions in life and include adolescence, separation from parents, and marriage. Other challenging transitions involve cultural stresses, such as war and the threat of war; rapid technological change; and physical events, such as drought, earthquakes, and famine. These transition points in life are important because they provide opportunity for learning and developing more sophisticated ways of coping with problems.

We have marvelous adaptive abilities for coping with varying, even extreme, situations. These abilities result from cultural evolution interacting with our biological evolution. Culturally we survive through complex communal living. Through our living groups we obtain satisfaction, develop identity, and find meaning to life. Basic social values are of special cultural importance, for they determine the limits of acceptable behavior, especially during times of stress. Biologically we are uniquely endowed for complex communal living. Such biological characteristics as aggression, the upright posture, prehension, speech, prolonged infancy and maturation, and profound development of the brain—all favor and allow for rich, dynamic, and complex living. Development of the cerebral hemispheres has played an especially important role in adaptation, for the cerebrum constitutes the biological basis of higher intelligence, self-awareness, complex language, and flexibility (8).

Thus through the interaction of biological evolution and cultural evolution, we have the equipment for adapting to and molding diverse environments. But

this ability to adapt by manipulating the environment is now our cause for greatest concern, for in changing the environment, man changes the conditions necessary for his survival. We now are seeing an unprecedented acceleration of various man-made changes which call for accompanying changes in man, changes which we are having difficulty in making. While biological change is extremely slow, cultural change theoretically occurs at least every generation, although some aspects of culture (such as technology) change faster than others (for example, beliefs and customs). The term "generation gap" not only describes how we today view the battle of the generations but also alludes to the speed of cultural change and how people have trouble keeping pace. Living in the electronic age, we watch televised accounts of pre-agricultural-age violence and feel our industrial-age mentality straining to cope with the environment.

Since survival results from the long-range adaptiveness of our behavior, knowledge of adaptive mechanisms is important for understanding the role of violence in human behavior and survival. In the section that follows we shall relate three theories of aggression to adaptation.

Adaptation and Theories of Aggression

Aggression has helped man survive. Aggression in man—including behaviors that are assertive, intrusive, and dominant as well as violent—is fundamental and adaptive. Violence is not a result of aggression but simply a form of aggression. Nor is all violence necessarily motivated by destructive aggression. For instance, in the sadistic behavior of sexual assaults, violence is evoked in part by sexual motives. In other instances, violence can occur accidentally or without conscious intent, as in many auto accidents. Currently there are three main views of aggression—all involving adaptation—but each suggests a different solution to the problem of violent behavior. Broadly labeled, these theories are (i) the biological-instinctual theory, (ii) the frustration theory, and (iii) the social-learning theory.

1) *The biological-instinctual theory* (14–16) holds that aggressive behavior, including violence, is an intrinsic component of man resulting from natural selection: Man is naturally aggressive.

It is hard to imagine the survival of man without aggressiveness, namely because aggression is an element of all purposeful behavior and, in many cases, provides the drive for a particular action. This theory says that aggression includes a wide variety of behaviors, many of which are constructive and essential to an active existence. Stimulus-seeking behavior (for example, curiosity or the need to have something happen) is certainly at least as important a facet of human behavior as avoidance behavior and need-satisfaction. Seeking the novel and unexpected provides much of life's color and excitement. Aggression can supply much of the force and power for man's creative potential.

Psychiatric and psychoanalytic case studies are one source of evidence supporting this theory (14–17). Examples range from individuals with destructive antisocial behavior who express violent aggression directly and often impulsively, to cases of depression and suicide in which violent aggression is turned against the self, and to seriously inhibited persons for whom the expression of aggression, even in the form of assertion, is blocked almost entirely. Psychiatrists and other mental-health professionals describe many disordered behaviors as stemming from ramifications and distortions of the aggressive drive (14).

Animal studies (6, 15, 18) (including primate field studies), studies of brain-damaged humans, and male-female comparisons provide behavioral, anatomical, and hormonal data illustrating the human predisposition to aggression. Among nonhuman mammals, intraspecies violence occurs less frequently than with humans (7). When violent aggressive behaviors do occur among members of the same species, they serve the valuable functions of spacing the population over the available land and maintaining a dominance order among the group members. Uncontrolled aggression in animals generally occurs only under conditions of overcrowding. Aggression in humans, even in the form of violence, has had similar adaptive value historically.

The biological-instinctual theory suggests that since aggression is inevitable, effective controls upon its expression are necessary, and reduction of violence depends upon providing constructive channels for expressing aggression.

2) *The frustration theory* (19) states that aggressive behavior comes from interfering with ongoing purposeful activity. A person feels frustrated when a violation of his hopes or expectations occurs, and he then tries to solve the problem by behaving aggressively. Frustrations can take various forms: threats to life, thwarting of basic needs, and personal insults. This theory often equates aggression with destructive or damaging violent behavior. Major factors influencing aggressive responses to frustration are the nature of the frustration, previous experience, available alternatives for reaction (aggression is by no means the only response to frustration), the person's maturity, and the preceding events or feelings. Even boredom may provoke an aggressive response. As a response to frustration, aggression is often viewed as a learned rather than an innate behavior. According to this theory, frustration-evoked aggression aims at removing obstacles to our goals; hence the frustration theory also ties in with adaptation. The aggressive response to frustration often is a form of coping behavior that may have not only adjustive but also long-range consequences.

The frustration theory suggests that control or reduction of violence requires reducing existing frustrations as well as encouraging constructive redirection of aggressive responses to frustration. This reduction includes removing or improving frustrating environmental factors that stand between personal needs and environmental demands. Such factors include violation of human rights, economic deprivation, and various social stresses.

3) *The social-learning theory* (20) states that aggressive behavior results from child-rearing practices and other forms of socialization. Documentation comes from sociological and anthropological studies and from observing social learning in children. Aggressive behavior can be acquired merely by watching and learning—often by imitation—and does not require frustration. Aggressive behaviors rewarded by a particular culture or subculture usually reflect the basic values and adaptive behaviors of the group. In American culture, where achievement, self-reliance, and individual self-interest are valued highly, we also find a relatively high emphasis on military glory, a relatively high incidence of personal crime, and a society characterized by a relatively high degree of bellicosity. Similar patterns occur in other cultures. From this theory we infer that as long as a nation values and accepts violence as an effective coping strategy, violent behavior will continue.

The social-learning theory of aggression suggests that control and reduction of violence require changes in cultural traditions, child-rearing practices, and parental examples. Parents who violently punish children for violent acts are teaching their children how and in what circumstances violence can be performed with impunity. Other changes in cultural traditions would emphasize prevention rather than punishment of violent acts and, equally important, would emphasize human rights and group effort rather than excessive and isolated self-reliance. The first step toward making the changes that will reduce violence is to examine our values. We must decide which values foster violence and then begin the difficult job of altering basic values.

In reality, the three theories of aggression are interrelated. Proclivities for social learning and for frustration often have a biological determinant. For example, the biology of sex influences the learning of courting behavior. Regarding violence, from these theories of aggression we see that the many expressions of violence include man's inherent aggression, aggressive responses to thwarted goals, and behavior patterns imitatively learned within the cultural setting. All three theories of aggression and violence fit into the adaptation-coping explanation. Violence is an attempt to cope with stressful situations and to resolve intolerable conflicts. Violence may have short-run adjustive value, even when the long-run adaptive consequences may in fact be adverse. It is the sometimes conflicting natures of adjustment and adaptation that are confusing and insufficiently appreciated. In some instances violence emerges when other more constructive coping strategies have failed. In other instances violence is used to enhance survival. Our species apparently has overabsorbed violence into our cultures as a survival technique. Children and adolescents have learned well the accepted violent behaviors of their elders.

All three theories help us understand violent behavior and hence suggest potential ways of reducing violence. In the following sections we consider current examples of violence from the perspective of those factors in our society that foster violence and from the standpoint of how these examples reflect the changing nature of adaptation.

Phenomenon of Presidential Assassination

Assassination is not an isolated historical quirk, eluding comprehension or analysis. The event is usually overdetermined by multiple but equally important factors: personal qualities of the assassin, a fatalistic posture assumed by the victim, and such factors in the social environment as political stereotypes, murder sanctions, and the symbolic nature of high offices.

Although assassination can strike down anyone, we have restricted our examination to assassination of presidents in America (21) by studying the personal qualities of "successful" assassins and of others who almost succeeded. Of the eight assassination attempts on American presidents, four have been successful. The following facts emerge. (i) All the assassination attempts were made with guns, all but one with pistols. (ii) All the assassins were shorter and weighed less than average men of the period. (iii) All the assassins were young adult Caucasian males. (iv) All the assassination attempts but one were made by individuals who were seriously disturbed or even paranoid schizophrenics (22). The exception was the final attempt of two Puerto Rican nationalists to kill President Harry S Truman. The successful assassins, for the most part, were mentally unbalanced and had persecutory and grandiose delusions.

Assassination provides a method for instantly satisfying a need for personal importance. The delusional assassin very probably had a fantasy that once the act was committed, an outcry of favorable opinion and acclaim would vindicate what he had done. In most of the instances of attempted or successful assassination, escape plans were inadequate or nonexistent.

The life pattern of most of the assassins included extreme resentment toward others—a resentment aggravated by a long history of isolation and loneliness. Often the isolation stemmed from poor and inconsistent relations with parents and others early in life, which resulted in most of the assassins having resentment and mistrust of parental figures. Their resentment toward parental figures might have included the President (political symbol of parenthood) as the head of the federal government. In response to imagined unfair treatment from others and a distortion of his own inadequacies, the assassin turned his anger on the chief of state.

Typically the assassin had struggled for importance, success, and manliness, but had failed. At the time of the attempted presidential assassination, the assassin was on a downward life course. Haunted by resentment and failure and plagued with disordered thinking and distortions of reality, the assassin took action. Shooting the President was thus an attempt to resolve conflicts with which he apparently could not otherwise cope. Providing an alternate outlet for his violent dissatisfaction would be one way of preventing the potential assassin from killing. Perhaps the ombudsman (public complaint receiver) system would allow the would-be assassin to voice his grievances against his intended victim, thereby lessening his pent-up frustrations and reducing the likelihood that he would kill.

Our discussion of another important determinant of assassination—the victim's fatalistic attitude—is not restricted to presidential assassinations. The fatalistic thinking and actions of several assassination victims are reflected in their strong disinclination toward taking precautionary measures despite recognizing the existence of violent impulses in others toward presidents and presidential candidates. Robert Kennedy stated a view that he shared with Abraham Lincoln, Martin Luther King, Jr., and John F. Kennedy: "There's no sense in worrying about those things. If they want you, they can get you" (23). This attitude often leads to dangerous negligence that is an exaggerated form of denying that one is actually afraid of physical harm. Lincoln has been described as "downright reckless" (24) about personal safety. Robert Kennedy was quoted as saying, "I'll tell you one thing: If I'm President, you won't find me riding around in any of those awful [bullet-proof] cars" (23). The fatalistic attitude illustrated by statements like this is encouraged by our tradition of expecting physical courage in our leaders. Men who repeatedly and publicly proclaim their vulnerability may be unwittingly encouraging assassination by offering an invitation to the delusional, grandiose, and isolated person who dreams of accomplishing at least one important and publicly recognized act in his life. "Mixing with the people" is firmly embedded in the American political tradition, but it is also an accomplice to assassination. One way to cope with this problem would be legislation to restrict the contact and exposure of a President with crowds when his presence has been announced in advance.

Mass Media and Violence

Television could be one of our most powerful tools for dealing with today's violence. It could provide education and encourage, if not induce, desired culture modification. Unfortunately, it does little of either today, perhaps because the harmful effects of televised violence have been glossed over. However, all the mass media do little to discourage and much to encourage violence in America. The Ugly American as a national stereotype is rapidly being displaced in the eyes of the world by the Violent American, his brother of late. This stereotype is fostered by the media but is sustained by the violent acts of some of our citizens. Armed with shotgun, ignorance, frustrations, or hunger, this Violent American can be seen today throughout our society. We are not all violent Americans, but mass media are giving us the violence we seem to want.

What effect do the mass media have (25)? All of us are probably affected by the media to some degree, but most research has focused on children, since an immature and developing mind is usually less capable of discrimination when responding to a given stimulus. One comprehensive review (26) described short-term effects that include the child's emotional reactions to what he views, reads, and hears. Long-term effects, what the child actually learns as a result of his exposure, may include vocabulary, factual information, belief systems, and such altered personality characteristics as increased aggressiveness. No one selects all the media materials available, nor does anyone absorb or retain the selected materials consistently or completely. Prior information, differing needs, and quality of life adjustment also help to filter the child's processing of the offered materials. Mass media effects also depend somewhat on the applicability of the learned material to the child's own life situation.

Similarly, as shown by another researcher (27), frustration, the anger evoked by it, the overall situation, the apparent severity and justification of the violence viewed in a film—all relate

to whether or not children use these aggressive responses.

A large study in Great Britain (28) showed that certain portrayals of violence are more disturbing to children than others. Unusual motives, settings, and weapons are more disturbing than stereotyped violence. For example, knives or daggers are more upsetting than guns or fist fights. Similarly, seeing violence or disasters in newsreels bothered children more than dramatized violence.

Another study (29) found that the average American child from 3 through 16 years old spends more of his waking hours watching television than attending school. First-graders spend 40 percent and sixth-graders spend 80 percent of their viewing time watching "adult" programs, with Westerns and situation comedies being most popular. By the eighth grade, children favor crime programs.

Can we justifiably say that the media teach violence? Television teaches more than vocabulary and factual information to the impressionable young viewer, who learns by identification and social imitation. Learning theorists have shown that children readily mimic the aggressive behavior of adults and that the degree of imitation is comparable whether the behavior is live or televised. In another study (30) nursery school children watched a film of adults aggressively hitting an inflatable plastic figure, a Bobo doll. Later these and other children were first mildly frustrated and then led individually into a room in which they found the Bobo doll and other materials not shown in the film. Those who had seen the film imitated precisely the film's physical and verbal aggression and made more aggressive use of other toys, such as guns, that had not been in the film. Film-watchers showed twice as much aggressiveness as those who had not seen the film.

These children were all from a "normal" nursery school population, and all showed some effect. This finding seriously questions the claim that such violence is learned only by deviant individuals. The findings apply equally to real, fictional, and fantasy violence. The impact on children observing aggressive behavior has been further corroborated in experiments in which live models, cartoons, and play materials were used. The idea that watching television satisfactorily releases pent-up aggressions (the catharsis theory) loses

credibility in the face of these data from social-learning experiments. Watching dramatized violence may actually lead to subsequent aggressive behavior.

A tendency toward repeating certain behaviors viewed in the media clearly exists. The mass media teach the alphabet of violence, but whether or not the actual performance of violent behaviors occurs depends on personality, subcultural values, and other factors. The research to date indicates that the learning of violence must be distinguished from the performance of it. One fear we have is that restraints and taboos against violent behavior may diminish as the result of observing prohibited behavior being condoned and rewarded on the screen. Violence depicts a way of life; it is disguised by a cloak of history or locale and becomes acceptable. We are never taught "in this School for Violence that violence in itself is something reprehensible" (31).

Even with the portrayed violence, the screen environment may be more desirable than the viewer's actual environment. In the culturally deprived American household the underfed, underoccupied, undereducated person may be an apt pupil of the school for violence. Such pupils more readily accept as real a violent world made of movies, newsprint, comic books, and video. The blurred line between fiction and reality grows fainter when there is nothing for dinner. Ghetto violence is one way of at least temporarily adjusting to intolerable personal frustrations and an unbearable environment.

Given the effectiveness of the mass media in achieving culture modification, we should determine whether the content of the media produces desirable or undesirable modification. How frequently is violent content offered in our media? According to a 1951 New Zealand study (32), 70 American films had roughly twice as much violence per film as did 30 films from other countries. A 1954 study of network television programs (33) found an actual doubling from one year to the next in the number of acts or threats of violence, with much of the increase occurring during children's viewing hours. These studies were all conducted before the documentary and news depiction of violence became common, and thus these studies dealt essentially with fictional violence. More recent studies reflect the same trends, however. A New York Times headline

from July 1968, reads "85 Killings Shown in 85½ TV Hours on the 3 Networks" (34).

Thus the media's repetitive, staccato beat of violence and the evidence of its impact upon the most impressionable members of our society show that violence is valued, wanted, enjoyed. In teaching that violence is a good quick way to get things done, television and other media teach that violence is adaptive behavior.

Part of the tragedy is that the mass media could effectively promote adaptive behaviors like nonviolent protest and other alternatives to violence. The communications personnel and we consumers alike share the responsibility for seeing that our mass media develop their own constructive educational potential. At the very least, violence in the media must be reduced. The statement is hackneyed, the conclusion is not.

Mental Illness, Violence, and Homicide

What is the relationship between mental illness and violence (35)? Generally the stereotype of the mentally ill person as a potentially dangerous criminal is not valid. The act of homicide often raises the question of psychosis, but only a relatively few psychotic individuals are potential murderers. The stereotype is kept alive, however, by the sensationalist news coverage of the few homicides committed by psychotics.

Mental illness does not usually predispose one to commit violent acts toward others. The patient with severe mental illness (psychosis) is frequently so preoccupied with himself and so disorganized that he is more likely to commit suicide than homicide. A main exception is the fairly well-organized paranoid patient with persecutory delusions concerning one or more particular individuals, intense hostility and mistrust for others, and a pervasive tendency to blame his troubles on the world. However, this type of mentally disordered person constitutes a small minority and does not greatly increase the low incidence of violent acts committed by those identified as mentally ill. In fact, several comparative studies indicate that patients discharged from mental hospitals have an arrest rate considerably lower than that of the general population. In a Connecticut state mental hospital (36) the felony arrest rate

400

was 4.2 per 1000 patients, whereas among the general population it was 27 per 1000. Compared to an arrest rate of 491 per 100,000 among the general population, New York state mental hospitals (37) reported a figure of 122 per 100,000 for male patients discharged during 1947. Ten thousand patients were studied. One state-wide survey of Maryland psychiatric hospitals (38) showed that the mentally ill are involved in criminal behavior about as often as the general population.

Since mental illness of itself is not predictive of violence or homicide, we must look for other predisposing conditions. Predicting specifically who will murder is difficult because over 90 percent of the murders committed are not premeditated and 80 percent involve an acquaintance or family member (39). One often demonstrated factor related to homicide is the excessive use of alcohol (40). Overindulgence in alcohol has been cited as one feature of the "pre-assaultive state" (40). Persons who are preassaultive usually show some combination of the following five factors: (i) difficulty enjoying leisure time often associated with the heavy use of alcohol; (ii) frequent clashes with close friends, spouse, and others; (iii) history of many fistfights and evidence of past violence (such as scars) reflecting difficulty with impulse control; (iv) fondness for guns and knives; and (v) being relatively young, usually under 45 years old. Comparing homicide rates for males and females universally indicates that a potential murderer is more often male than female. This difference reflects more frequent use of guns and knives ("male" weapons) for murdering as well as sex differences in expressing aggression.

Case histories of homicide reveal repeatedly that a person uses murder as a means of conflict resolution in an unbearable situation for which he can find no other solution. Predisposing factors for homicide include alcoholism, subcultural norms accepting violence as a means of settling conflict, a setting in which the individual experiences intolerable frustration or attack, helplessness resulting from the unavailability of or the inability to perceive alternative actions, intense emotions, and distortion of reality (perhaps even to the point where reality disappears because of personality disintegration). In the instance of blind rage, a person sometimes murders

without realizing what he is doing.

The act of homicide may be viewed as attempted coping behavior. Homicide eliminates the immediate problem at a time when there seems to be no future or when the future seems unimportant, and the long-range consequences of the act are not considered. Put another way, homicide has adjustive rather than adaptive value.

Firearms Control and Violence

Violence by firearms has recently caused great concern (41, 42). The question of whether there is a gun problem is complicated by regional variations in both the actual incidence and the reporting of crime and multiple psychosocial variables, such as individual "choice" of homicide, population density, age, race, socioeconomic status, religion, and law-enforcement effectiveness.

Even so, the following statistics (39, 43) estimating the involvement of guns in various forms of violence in America indicate that a problem does exist. In 1967 firearms caused approximately 21,500 deaths—approximately 7,700 murders, 11,000 suicides, and 2,800 accidental deaths. In addition, there were also about 55,000 cases of aggravated assault by gun and 71,000 cases of armed robbery by gun. Between 1960 and 1967, firearms were used in 96 percent (that is, 394) of 411 murders of police officers. More than 100,000 nonfatal injuries were caused by firearms during 1966. A study in Chicago (44) in which assaults with guns were compared to those with knives shows many more equally serious assaults with knives than with guns; but more of the gun assaults were fatal. Another study (27) convincingly shows that the mere presence of a gun serves as a stimulus to aggression, that is, "The finger pulls the trigger, but the trigger may also be pulling the finger." The number of guns owned by citizens is unknown, but estimates run from 50 to 200 million (39). In 1967 approximately 4,585,000 firearms were sold in the United States, of which 1,208,000 were imports (43). Lately, data from a 1963 World Health Organization survey of 16 developed countries (39) give America an overwhelming lead in death rates for both homicide and suicide by firearms.

These data speak for themselves. What they do not show are the steady increases in all categories for gun-related mortality cited during the past few years. Firearms sales increased by 132 percent between 1963 and 1967.

Responsibility for legal restrictions on guns has generally been left to the states. Consequently, regulations on the sale of guns vary greatly. The lack of uniform laws and the ability (until recently) to buy guns in one state and transport them to another state have made it difficult to compare accurately the gun laws of different states. Even the so-called strict gun laws may not possess sufficient strength to reduce gun killings significantly.

Until 1968 there were only two federal laws of note (45). The National Firearms Act of 1934 imposes a tax on the transfer of certain fully automatic weapons and sawed-off shotguns. The Federal Firearms Act of 1938 requires a license for interstate sale of firearms and prohibits interstate shipment of guns to convicted felons, fugitives, and certain other persons. Two bills passed in 1968 go somewhat further but do not include firearm registration (41). The Omnibus Crime Control and Safe Streets Act restricts interstate and foreign commerce in hand guns. The Gun Control Act also adds mail-order sale of rifles and shotguns to this restriction and prohibits over-the-counter sales to out-of-state residents, juveniles, convicted felons, drug users, mental defectives, and patients committed to mental hospitals.

Although the data do not provide an ironclad indictment against weak, inconsistent legislation, we believe that they make a convincing argument. What is more, more than two-thirds of the American people continue to favor stronger gun-control legislation (42). Even the frightening regularity of assassination has not resulted in strong legislation (that is, legislation requiring registration of guns and owners). How then can we account for the successful opposition to strong gun legislation?

Diverse groups comprise the one-third or less of Americans who do not favor stricter gun control laws. The most visible opposition group is the large (about 1 million members), well-organized National Rifle Association (NRA). With an immense operating budget (approximately $5.7 million in 1967), the NRA is an especially effective "gun lobby" (46). Another group, the Black Panthers, sees arms as necessary for survival. Eldridge Cleaver, Defense Minister of the Black Panthers,

wrote, "We are going to keep our guns to protect ourselves from the pigs [police]" (47). Protection is also the issue in Dearborn, Michigan, where housewives are arming against the potential rioter and looter who might "invade" Dearborn from Detroit. Tragic escalation continues around the interplay of urban and suburban action and reaction.

Arguments opposing gun legislation can be divided into five overlapping categories.

1) Gun control would cause the loss of rights and possessions. This argument takes various forms: Restrictive legislation is an effort to disarm American sportsmen and law-abiding citizens; legislation would result in the loss of the so-called basic American freedom, "the right of the people to keep and bear arms"; and maintaining an armed citizenry ensures the protection of American liberties, especially against tyrannies from the political right or left. A common fear is that gun laws could lead from registration to discrimination and finally to confiscation of all firearms.

Our traditional frontier and rural ways of life are disappearing, and with this change has come a decrease in our traditional freedom and individualism. For many opposing gun legislation, the actual and potential loss of a way of life and its prized symbol—the gun—make gun legislation a concern basic to the adaptiveness of our society. These opponents assume that restrictions on the "right to bear arms" endanger our way of life.

2) Guns represent protection from dangers. The gun is seen as providing personal protection from and a means of coping with life-threatening dangers and destructive evil forces, be they criminals, drug addicts, rapists, communists, other subversives, mental patients, rioters, police, or racists. The NRA promotes this coping strategy in its official publication, The American Rifleman (48). A monthly NRA column, "The Armed Citizen," states that "law-enforcement officers cannot at all times be where they are needed to protect life or property in danger of serious violation. In many such instances, the citizen has no choice but to defend himself with a gun" (48). The power of this argument depends upon a person's feelings of helplessness and mistrust in the face of danger.

Many people in urban areas or changing neighborhoods fear the rising crime rate and the breakdown of law

and order. However, there is no documentation that an armed citizenry provides greater individual or group protection than an unarmed citizenry. On the contrary, the potential danger of such individual armed protection in our congested urban society includes harm to innocent bystanders, accidental shootings, and the increased likelihood of impulsive violence, which already accounts for over 90 percent of homicides in America.

3) Crime is reduced by punishment and not by gun control. Several forms of this argument state that gun-control legislation simply is not an effective way of reducing crime and violence: (i) Guns don't kill people, people kill people; (ii) when guns are outlawed, only outlaws will have guns (because they steal them anyway); (iii) crime is not associated with guns but with such social factors as population density, population composition, economic status, and strength of police; and (iv) effective enforcement of present laws has not been tried.

Using stronger and even cruel punishment to cope with gun-using criminals has to date not been proven as an effective deterrent, and its use, we believe, is morally indefensible. The "crime and punishment" thesis ignores data showing that more than three out of four homicides and two out of three criminal assaults occur among family and friends, that is, most murders are committed by "law-abiding citizens." In addition, criminals can and do purchase weapons from legal sources.

4) A gun represents strength and manliness. Gun literature usually implies this argument. Acts of heroism and bravery are associated with gun usage. Members of the NRA receive distinguished fighting medals. Pictures and advertisements reflect manliness and imply that gun usage means "standing up for your rights."

Guns may serve as a source of power, pride, and independence (the "equalizer"—for feelings of inferiority or inadequacy) and as the symbol of manliness and potency. Guns can and do represent these qualities in our culture, even to a pathological degree for some of us.

5) Guns provide recreation and support the economy. Arguments here portray citizens as being restricted from and deprived of healthy outdoor life, the hobby of gun collecting, family recreation, and the fellowship associated with hunting and target shooting. For example, an article in The American

Rifleman entitled "Happiness is a Warm Gun" (49) depicts a close father-son relationship based on shooting. Additionally, gun sales and fees are held to be important economic factors supporting hunting states and conservation programs.

These arguments indicate that the issue of gun legislation is pragmatic, ideological, psychological, and economic, and is not based upon sound empirical data. The fervor of the arguments accurately reflects the deep emotional attachments at stake. Indeed, the specific content of proposed gun laws often seems irrelevant. Tragically, the arguments confuse ideology with issues of violence that must be solved. If strictly pragmatic issues of protection were involved, better police protection and increased communication with the feared group or groups should diminish the fear.

Finally, we have found that the "statistics game" is often played by both sides of this particular controversy. By presenting selected statistics and invalid inferences, both sides have obscured the more important goals of reducing gun killings and violence.

Yet, on balance, data document the need for strong and more uniform firearms legislation. We know of no single issue concerning violence that reflects more clearly the changing nature of adaptation. Challenges of the complex urban society in which we live cannot be met with old frontier means of survival—every man protecting himself with his own gun. Yet, gun legislation is no panacea. While reflecting America's desire for action, focusing or relying on legislation alone tends to obscure basic issues of violence and how we persist in using both individual and collective violence as a means of resolving conflict.

Collective and Sanctioned Violence

An additional dilemma is that killing is neither legally nor socially defined as an unequivocally criminal act. The existence of capital punishment and war gives qualified sanction to violence as a means of resolving conflict. Both the general public and their leaders always seem to be able to justify any violence perpetrated on their fellow man. Thus in practice the legitimacy of violence is arbitrary and depends more on the will of powerful men than on moral, ethical, or humane considerations. In a sense, all sanc-

tioned violence is collective, since it has group social approval. Certainly the existence of sanctioned violence abrades the concept of law and order.

We desperately need research on the psychological processes that permit an individual or group to view some violence as good (and presumably adaptive) and other forms of violence as bad (and presumably maladaptive). Although the history of violence in man is polymorphous, there likely are psychological mechanisms common to all cultures and times. For instance, the psychology of sanctioned violence everywhere depends on attributing evil motives to the "outsiders." Then because "they" are violent (evil), "we" *have* to be violent, or (twisted even further) because "they" are violent, it is *good* for "us" to be violent.

Thus people who have seen sanctioned violence being committed in the name of law, order, justice, moral obligation, and duty come to use violence themselves as a "just" means of solving their own problems. The people are acting as their government's representatives have acted—if the cause is just, the grievance real, then unlimited power and force can be used.

Nowhere do we better find this thinking reflected than in the actions of rioters (50). Study of the 1967 Detroit uprising (51) showed that the rioters (young, better educated men who had experienced frustration of their rising expectations) viewed violence against the "system" as justified. Not surprisingly, their views of what justifies violence differed greatly from those of the law enforcers and of the middle-aged black citizens. To the rioters violence was a means of accomplishing goals seemingly not attainable by nonviolent means. Their belief in the power of violence is understandable. Civil disorders are serving in part as a catalyst for change and an instrument of achievement. Some uprising participants reported that violence provided a sense of manliness and strength. But do these supposed gains outweigh the damage of escalations of counterviolence and potential suppression? At least the hypothesis that violence purifies, enhances manliness, and strengthens identity is subject to empirical study.

The results of social-psychiatric field investigations like those in Detroit and at Brandeis University's Lemberg Center for the Study of Violence are useful steps toward understanding the psychological processes and conditions

evoking collective violence. For instance, a Lemberg report (52) cited four socio-psychological antecedents to ghetto uprisings: (i) a severe conflict of values between dominant and minority groups; (ii) a "hostile belief system" held by the aggrieved group, based considerably on reality; (iii) a failure of communication between the aggrieved and dominant groups; and (iv) a failure in social control resulting from either overcontrol or undercontrol. In short, these studies show that psychiatrists and psychologists can and must help to resolve the crisis of violence through field studies, facilitating communication between opposing groups, and making recommendations for social change.

But what of war? Behavioral scientists have grasped at all sorts of explanations for this species' warring behavior. Perhaps even this attempt to explain war is a cause of war; our ability to justify any form of violence is part of man's magnificent cerebral endowment. Many causes of war have been suggested: contiguity, habituation, social learning, predation, psychological defenses (for example, rationalization, blaming, denial, counterphobic tendencies among others), the host of fears associated with the human condition, territoriality and power, intolerable frustration, biologically rooted aggressive instincts, and sadism (53–55). One wonders whether the mere distance and speed with which we kill are factors rendering meaningless the signals of submission that other animals use to halt violent encounters (54). Often we literally no longer have to touch the results of our violence. The impersonal factor shows up in another way. Since war is an activity between organized nation states rather than angry individuals, decisions producing war often are made in a calculated manner by those who do not participate directly in any personal acts of violence.

The evidence of history is that war proves everything and nothing. An adequate analysis of the Vietnam war and of the myriad of other wars dotting history is far too great a task for this discussion, despite the relevance of war to the current crisis of violence (55).

Although preventive measures are difficult to administer in the face of the contradicting sanctioned and unsanctioned violence, there are remedies to violence, and we have discussed some of them. More effort could be expended trying to understand the all-

important relation between the excessive use of alcohol and homicide. Disseminating currently available information on how to identify a potential murderer will help. Despite Americans' conflicting feelings about guns, there is a gun-death problem today, and more effective and uniform gun legislation can keep guns out of the hands of those who are likely to act impulsively. The mass media can play an increasingly responsible and educational role, while reducing the amount of violence for violence's sake. Many positive potentials of the media have not yet been tapped. Citizen complaint agencies can be established, of which one possibility might be homicide prevention centers along the lines of the suicide prevention centers. Frustrated minority groups will become less frustrated when they are not blocked from responsible participation and self-determination. Peaceful resolution of conflict (56) such as nonviolent protest and negotiation, reducing the amount of sanctioned violence, encouraging a shared sense of humanity, and moving toward rehabilitation rather than retribution in dealing with crime—all these are promising directions. Violence must be studied scientifically so that human behavior can be sustained by knowledge.

Changing Nature of Human Adaptation: Some Speculations

Violence is unique to no particular region, nation, or time (55). Centuries ago man survived primarily as a nomadic hunter relying on violent aggression for both food and protection. Even when becoming agricultural and sedentary, man struggled against nature, and survival still required violent aggression, especially for maintaining territory when food was scarce.

Then in a moment of evolution man's energies suddenly produced the age of technology. Instead of adapting mainly by way of biological evolution, we are now increasingly subject to the effects and demands of cultural evolution. Instead of having to adapt to our environment, we now can adapt our environment to our needs. Despite this potential emancipation from biological evolution, we retain the adaptive mechanisms derived from a long history of mammalian and primate evolution, including our primitive forms of aggression, our violence, bellicosity, and inclination to fight in a time of emergency. Where these mechanisms once

responded more to physical stress, they now must respond more to social, cultural, and psychological stresses, and the response does not always produce adaptive results. Where violent aggressive behavior once served to maintain the human species in times of danger, it now threatens our continued existence.

In this new era, culture changes so rapidly that even time has assumed another dimension—the dimension of acceleration. Looking to the past becomes less relevant for discerning the future.

In the current rapidly expanding technological era, many once useful modes of adaptation are transformed into threats to survival. Territorial exclusivity is becoming obsolete in an economy of abundance. Vast weapons, communication, and transportation networks shrink the world to living-room size and expand our own backyard to encompass a "global village." Yet war and exclusivity continue. Our exploitation of natural resources becomes maladaptive. Unlimited reproduction, once adaptive for advancing the survival of the species, now produces the overcrowded conditions similar to those that lead to destructive and violent behavior in laboratory experiments with other species.

The rate at which we change our environment now apparently exceeds our capacity for adapting to the changes we make. Technological advances alter our physical and social environments, which in turn demand different adaptive strategies and a reshaping of culture. The accelerated civilization of technology is crowded, complex, ambiguous, uncertain. To cope with it, we must become capable of restructuring knowledge of our current situation and then applying new information adaptively. Several factors give us reason to hope that we can succeed.

1) Our social organization and intellectual abilities give us vast potential for coping. Knowledge and technology can be harnessed to serve goals determined by man. Automation makes possible the economics of abundance, but only our cultural values can make abundance a reality for all people. Medicine permits us to control life, but we have not yet seen fit to use this power to determine the limits of population. The technologies of communication and travel shrink the world, but man has not yet expanded the horizon of exclusion. We can learn to unite in goals that transcend exclusivity and

direct cultural evolution in accordance with adaptive values and wisdom. The past need not be master of our future.

2) Violence can be understood and controlled. The crisis is one of violence, not of aggression, and it is violence that we must replace. Aggression in the service of adaptation can build and create rather than destroy. The several theories of aggression and current issues of violence suggest many complementary ways of controlling and redirecting aggression. We have suggested some in this article. Furthermore, our brief review of theory and issues points to many possibilities for multidimensional research—an approach that we believe is needed rather than "one note" studies or presentations.

3) Greater attention can be focused on both social change and adaptation processes. Cultural lag in the technological era produces not stability but a repetitious game of "catch up" characterized by one major social crisis after another and by behaviors that are too often only adjustive in that they bring relief of immediate problems while doing little to provide long-range solutions. Expanding our knowledge of the processes of social change and understanding resistance to change are of highest priority. Unforeseen change produces intolerable stress, anxiety, and increased resistance to rational change. These reactions inhibit solution-seeking behavior; evoke feelings of mistrust, loss, and helplessness; and lead to attacks on the apparent agents of change. We must develop the ability to foresee crises and actively meet them. We must dwell more on our strengths, assets, and potential as the really challenging frontier.

Conclusion

The current examples of violence and the factors encouraging it reflect our vacillation between the anachronistic culture of violence and the perplexing culture of constant change. We feel alienated and experience social disruption. Current demands for change are potentially dangerous because change activates a tendency to return to older, formerly effective, coping behaviors. Social disruption caused by change tends to increase violence as a means of coping at a time when violence is becoming a great danger to our survival.

America's current crises of violence make it difficult for us to cope with

our changing world. Today's challenge, the crisis of violence, is really the crisis of man. This crisis is especially difficult because violence, a once useful but now increasingly maladaptive coping strategy, seems to be firmly rooted in human behavior patterns. We conquer the elements and yet end up facing our own image. Adaptation to a changing world rests on how effectively we can understand, channel, and redirect our aggressive energies. Then man can close his era of violence.

Summary

We are uniquely endowed both biologically and culturally to adapt to our environment. Although we are potentially capable of consciously determining the nature of our environment, our outmoded adaptive behavior—our violent aggression—keeps us from doing so.

Aggression is viewed as multidetermined. It is inherent, caused by frustration, or learned by imitation. Violent aggression is a form of attempted coping behavior that we in America, as others elsewhere, use despite its potentially maladaptive and destructive results. Current examples of violence and the factors fostering it include assassination, the mass media, mental illness and homicide, firearms and resistances to restrictive gun legislation, and collective and sanctioned violence. These examples are considered from the perspectives of the changing nature of adaptation and the opportunities they offer for research. Among recommendations for resolving or reducing violence, the need for thoughtful research by behavioral scientists is stressed. But the major obstacle to removing violence from our society is our slowness to recognize that our anachronistic, violent style of coping with problems will destroy us in this technological era.

References and Notes

1. L. Eiseley, *The Immense Journey* (Random House, New York, 1946).
2. D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds., *Violence and the Struggle for Existence* (Little, Brown, Boston, in press).
3. Dr. T. Bittker, C. Boelkins, Dr. P. Bourne, Dr. D. N. Daniels (co-chairman); Dr. J. C. Gillin, Dr. M. F. Gilula, Dr. G. D. Gulevich, Dr. B. Hamburg, Dr. J. Heiser, Dr. F. Ilfeld, Dr. M. Jackman, Dr. P. H. Leiderman, Dr. F. T. Melges, Dr. R. Metzner, Dr. F. M. Ochberg (co-chairman); Dr. J. Rosenthal, Dr. W. T. Roth, Dr. A. Siegel, Dr. G. F. Solomon, Dr. R. Stillman, Dr. R. Taylor, Dr. J. Tinklenberg, Dr. Edison Trickett, and Dr. A. Weisz.
4. *Webster's Third New International Dictionary* (Merriam, Springfield, Mass., 1966).

5. J. Gould and W. L. Kolb, *A Dictionary of the Social Sciences* (Free Press, New York, 1964); L. E. Hinsie and R. J. Campbell, *Psychiatric Dictionary* (Oxford Univ. Press, ed. 3, New York, 1960).

6. R. C. Boelkins and J. Heiser, "Biological aspects of aggression," in *Violence and the Struggle for Existence*, D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press).

7. *The Natural History of Aggression*, J. D. Carthy and F. J. Ebling, Eds. (Academic Press, New York, 1964).

8. Th. Dobzhansky, *Mankind Evolving* (Yale Univ. Press, New Haven, 1962).

9. G. G. Simpson, "The study of evolution: Methods and present states of theory," in *Behavior and Evolution*, A. Roe and G. G. Simpson, Eds. (Yale Univ. Press, New Haven, 1958).

10. D. A. Hamburg, "Emotions in the perspective of human evolution," in *Expression of the Emotions in Man*, P. D. Knapp, Ed. (International Universities Press, New York, 1963).

11. C. Kluckhohn, "The limitations of adaptation and adjustment as concepts for understanding cultural behavior," in *Adaptation*, J. Romano, Ed. (Cornell Univ. Press, Ithaca, New York, 1964).

12. E. Silber, D. A. Hamburg, G. V. Coelho, E. B. Murphey, M. Rosenberg, L. I. Pearlin, *Arch Gen. Psychiat.* 5, 354 (1961).

13. D. A. Hamburg and J. E. Adams, *ibid.* 17, 277 (1967).

14. O. Fenichel, *The Psychoanalytic Theory of Neurosis* (Norton, New York, 1945).

15. K. Lorenz, *On Aggression* (Harcourt, Brace and World, New York, 1966).

16. A. Storr, *Human Aggression* (Atheneum, New York, 1968).

17. G. F. Solomon, "Case studies in violence," in *Violence and the Struggle for Existence*, D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press).

18. J. P. Scott, *Aggression* (Univ. of Chicago Press, Chicago, 1958).

19. L. Berkowitz, *Aggression: A Social-Psychological Analysis* (McGraw-Hill, New York, 1962); J. Dollard, L. W. Doob, N. E. Miller, O. H. Mowrer, R. R. Sears, *Frustration and Aggression* (Yale Univ. Press, New Haven, 1939).

20. A. Bandura and R. H. Walters, *Social Learning and Personality Development* (Holt, Rinehart, & Winston, New York, 1963); F. Ilfeld, "Environmental theories of aggression," in *Violence and the Struggle for Existence*, D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press); M. E. Wolfgang and F. Ferracuti, *The Sub-Culture of Violence* (Barnes and Noble, New York, 1967).

21. R. Taylor and A. Weisz, "The phenomenon of assassination," in *Violence and the Struggle for Existence*, D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press).

22. L. Z. Freedman, *Postgrad. Med.* 37, 650 (1965); D. W. Hastings, *J. Lancet* 85, 93 (1965); *ibid.*, p. 157; *ibid.*, p. 189; *ibid.*, p. 294.

23. "It's Russian roulette every day, said Bobby," San Francisco *Examiner* (6 June 1968).

24. J. Cottrel, *Anatomy of an Assassination* (Muller, London, 1966).

25. A. E. Siegel, "Mass media and violence," in *Violence and the Struggle for Existence*, D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press); O. N. Larsen, Ed., *Violence and the Mass Media* (Harper and Row, New York, 1968).

26. E. A. Maccoby, "Effects of the mass media," in *Review of Child Development Research*, L. W. Hoffman and M. L. Hoffman, Eds. (Russell Sage Foundation, New York, 1964).

27. L. Berkowitz, *Psychol. Today* 2 (No. 4), 18 (1968).

28. H. T. Himmelweit, A. N. Oppenheim, P. Vince, *Television and the Child* (Oxford Univ. Press, New York, 1958).

29. W. Schramm, J. Lyle, E. B. Parker, *Television in the Lives of Our Children* (Stanford Univ. Press, Stanford, Calif., 1961).

30. A. Bandura, D. Ross, S. Ross, *J. Abnorm. Soc. Psychol.* 63, 575 (1961); *ibid.* 66, 3 (1963).

31. F. Wertham, *A Sign for Cain* (Macmillan, New York, 1966).

32. G. Mirams, *Quart. Film Radio Television* 6, 1 (1951).

33. Purdue Opinion Panel, *Four Years of New York Television* (National Association of Educational Broadcasters, Urbana, Ill., 1954).

34. Associated Press report of 25 July 1968; *Christian Science Monitor* article; New York *Times* (29 July 1968).

35. G. D. Gulevich and P. Bourne, "Mental illness and violence," in *Violence and the Struggle for Existence*, in D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press).

36. L. H. Cohen and H. Freeman, *Conn. State Med. J.* 9, 697 (1945).

37. H. Brill and B. Malzberg, *Mental Hospital Service (APA) Suppl. No. 153* (August 1962).

38. J. R. Rappaport and G. Lassen, *Amer. J. Psychiat.* 121, 776 (1964).

39. C. Bakal, *No [sic] Right to Bear Arms* (Paperback Library, New York, 1968).

40. C. A. deLeon, "Threatened homicide—A medical emergency," *J. Nat. Med. Assoc.* 53, 467 (1961).

41. J. C. Gillin and F. M. Ochberg, "Firearms control and violence," in *Violence and the Struggle for Existence*, D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press).

42. D. N. Daniels, E. J. Trickett, J. R. Tinklenberg, J. M. Jackman, "The gun law controversy: Issues, arguments, and speculations concerning gun legislation," *Violence and the Struggle for Existence*, in D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press).

43. Criminal Division, U.S. Department of Justice, *Firearms Facts* (16 June 1968); based in large part on the Federal Bureau of Investigation, *Uniform Crime Reports* (1967) (U.S. Government Printing Office, Washington, D.C., 1968).

44. F. Zimring, "*Is Gun Control Likely To Reduce Violent Killings?*" (Center for Studies in Criminal Justice, Univ. of Chicago Law School, Chicago, 1968).

45. *Congressional Quarterly*, "King's murder, riots spark demands for gun controls" (12 April 1968), pp. 805–815.

46. R. Harris, *The New Yorker* 44 (20 April 1968), p. 56.

47. E. Cleaver, *Ramparts* 7 (15 June 1968), p. 17.

48. *Amer. Rifleman* 116 (Nos. 2–5) (1968), various writings.

49. W. W. Herlihy, *ibid.* 116 (No. 5), 21 (1968).

50. T. E. Bittker, "The choice of collective violence in intergroup conflict," in *Violence and the Struggle for Existence*, D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press).

51. P. Lowinger, E. D. Luby, R. Mendelsohn, C. Darrow, "*Case study of the Detroit uprising: The troops and the leaders*" (Department of Psychiatry, Wayne State Univ. School of Medicine, and the Lafayette Clinic, Detroit, 1968); C. Darrow and P. Lowinger, "The Detroit uprising: A psychosocial study," in *Science and Psychoanalysis, Dissent*, J. H. Masserman, Ed. (Grune and Stratton, New York, 1968), vol. 13.

52. J. Spiegel, *Psychiat. Opinion* 5 (No. 3), 6 (1968).

53. J. D. Frank, *Sanity and Survival: Psychological Aspects of War and Peace* (Random House, New York, 1967); I. Ziferstein, *Amer. J. Orthopsychiat.* 37, 457 (1967).

54. D. Freeman, "Human aggression in anthropological perspective," in *The Natural History of Aggression*, J. D. Carthy and F. J. Ebling, Eds. (Academic Press, New York, 1964).

55. L. F. Richardson, *Statistics of Deadly Quarrels* (Boxwood Press, Pittsburgh, 1960).

56. F. Ilfeld and R. Metzner, "Alternatives to violence: Strategies for coping with social conflict," in *Violence and the Struggle for Existence*, D. N. Daniels, M. F. Gilula, F. M. Ochberg, Eds. (Little, Brown, Boston, in press).

57. We thank Dr. D. A. Hamburg and Dr. A. Siegel for their review and critique of this paper and M. Shapiro, C. DiMaria, and R. Franklin for their contributions in preparing this manuscript.