
A Comparative Analysis of North American Adolescent and Adult Mass Murderers

J. Reid Meloy, Ph.D.,* Anthony G. Hempel, D.O., M.A.,¹ B. Thomas Gray, Ph.D.,¹ Kris Mohandie, Ph.D.,² Andrew Shiva, Ph.D.,³ and Thomas C. Richards, Ph.D.⁴

Thirty adult mass murderers and 34 adolescent mass murderers in North America are compared on both offender and offense variables to delineate similarities and differences. Findings indicate a plethora of psychiatric disturbances and odd/reclusive and acting-out personality traits. Predisposing factors include a fascination with weapons and war among many of the adolescents and the development of a “warrior mentality” in most of the adults. Precipitating factors indicate a major rejection or loss in the hours or days preceding the mass murder. Results are interpreted through the lens of threat assessment for targeted violence (Borum, Fein, Vossekuil, & Bergland 1999), recognizing that a fact-based, dynamic behavioral approach is most useful for mitigating risk of such an extremely low-base-rate violent crime. Copyright © 2004 John Wiley & Sons, Ltd.

Although Shakespeare cautioned that “there is no sure foundation set on blood, no certain life achieved by other’s death” (*King John*, 4.2.104), humans continue to intentionally kill one another with a savagery and commitment that is almost incomprehensible. One way of killing is mass murder—the intentional killing of multiple victims in one continuous event.

The scientific study of mass murder is limited but growing. Early work focused on mass and serial murder together and suffered from imprecise methodologies and definitions (Levin & Fox, 1985). Several recent publications have attempted to

*Correspondence to: J. Reid Meloy, Ph.D., Clinical and Forensic Psychology, P.O. Box 90699, San Diego, CA 92169, U.S.A.

E-mail: jrmeloy@san.rr.com

¹North Texas State Hospital at Vernon.

²Operational Consulting International, Inc.

³Bellevue Hospital Center, New York.

⁴University of North Texas.

Contract/grant sponsor: Forensis.

appeal to a more general audience and have compiled larger numbers of case studies (Chester, 1993; Kapardis, 1989; Kelleher, 1997; Lane & Gregg, 1994; Leyton, 1996; Time-Life Books, 1992). Holmes and Holmes (1992) suggested classifying mass murder along six dimensions—motivation, anticipated gain, victim selection, victim relationship, traits, and spatial mobility—a contextualized approach that is consistent with more recent understanding of the historical, dispositional, clinical, and situational nature of violence risk assessment (Monahan *et al.*, 2001). Hempel, Meloy, and Richards (1999) studied a nonrandom sample of 30 North American adults who committed mass murder between 1949 and 1998, and found them to be single or divorced males in their fourth decade of life with various Axis I paranoid or depressive conditions and Axis II schizoid, narcissistic, and antisocial traits and disorders. Clinical and situational aspects of the subjects as they moved toward the commission of a mass murder included the development of a “warrior mentality,” and a major loss just prior to the event.

Hempel, Levine, Meloy, and Westermeyer (2000) provided a comparison of mass murder between the Asian and Occidental cultures by contrasting their North American data with earlier findings from the study of *amok*, a Malaysian word referring to a syndrome of uncontrollable rage and aggressive behavior (Westermeyer, 1973a, 1973b). Both groups of subjects showed evidence of social isolation, loss, depression, anger, pathological narcissism, and paranoia, often to a psychotic degree. The researchers concluded that the perpetrators of *amok* were more similar to than they were different from the mass murderers within their North American sample.

Cantor, Mullen, and Alpers (2000) compiled a sample of seven cases from Australia, New Zealand, and Britain that they used in defining a specific type of mass murder, which they termed a “civilian massacre.” The subjects engaged in the “indiscriminate killing of mostly randomly selected victims” (p. 55) in one continuous incident, resulting in the deaths of at least three victims. They found that the seven men, with an average age of 29, were socially unsuccessful, self-absorbed, and resentful; and tended to be egocentric, rigid, obsessional, and narcissistic. “A deteriorating life course, combined with chronic resentment and fantasies, appears to have contributed to each of these men having reached a critical threshold for mass homicide” (p. 61). The researchers introduced the ethological concept of “status acquisition” to help understand this phenomenon, and cautioned that four of their subjects may have been directly influenced by preceding massacres. They also noted the commonality of “lone warrior” identifications and weapons fascination in their small sample.

The study of adolescent mass murder has likewise been approached by several different research groups. Benedek and Cornell (1989) found that six of their 72 cases of juvenile homicide were multiple murderers, three of whom killed at least one family member, and three of whom murdered strangers. McGee and DeBernardo (1999) studied 14 cases of adolescent mass murder and proposed a “profile” of their “classroom avenger”: A white male, average age 16, raised in a middle class suburban or rural family, with no history of mental illness, disability, or retardation. He is perceived as a loner, has a history of attachment difficulties, is quite interested in violence, but has no history of violent behavior. He spends a great deal of time immersed in violent fantasies and carefully plans the mass murder. The incident is triggered by rejection or disciplinary action. He meets diagnostic criteria for an

atypical depression and mixed personality disorder with paranoid, antisocial, and narcissistic features.

The New York Times (Fessenden, 2000) conducted a systematic analysis of 102 cases of "rampage killers," of whom 16 were adolescents (under 18 years). Their investigators found that insufficient recognition of mental illness played an important role in the killings, and the adolescents were different from adult mass murderers in their collaboration with others, fewer suicidal outcomes, and less emotional detachment during their crimes.

Both the FBI and the U.S. Secret Service posted reports of their studies of school shootings on their respective websites (O'Toole, 2000; Vossekui, Reddy, Fein, Borum, & Modzeleski, 2000). Although these studies were not peer reviewed, did not contain any statistical analyses, and did not specifically focus on mass murder, they nevertheless offered important general findings and recommendations for adolescents who threatened assault, injured, or killed others at school with a firearm. The FBI study offered a four-pronged threat assessment model—personality, family dynamics, school dynamics, and social dynamics—in their study of 18 cases. With an abundance of predictive caution, O'Toole (2000) offered the following personality traits and behaviors that may be associated with violence: leakage (revelation of clues that may signal an impending act), low frustration tolerance, poor coping skills, lack of resiliency, failed love relationship, "injustice collecting," signs of depression, narcissism, alienation, dehumanization of others, lack of empathy, exaggerated sense of entitlement, attitude of superiority, exaggerated need for attention, externalized blame, masked low self-esteem, anger management problems, intolerance, inappropriate humor, seeking to manipulate others, lack of trust, a closed social group, change of behavior, rigid opinions, unusual interest in sensational violence, fascination with violent entertainment, negative role models, and behaviors that appear relevant to carrying out a threat. These characteristics were integrated with data from the other three prongs, and were used to recommend a threat intervention strategy.

The U.S. Secret Service likewise studied 41 "attackers" involved in 37 school shootings, including interviews with ten of the perpetrators. Their data showed that the incidents were rarely impulsive, there was no specific profile of a school shooter (although a majority had been bullied), most shooters had previously used guns and had access to them, targets were not directly threatened yet other students were usually involved, and others were concerned prior to the incident (Vossekui et al., 2000). The approach of the Secret Service to this problem was more functional-behavioral than that of the FBI, and a particular emphasis was placed on specific activities and communications that may have forewarned the planning or preparation of an attack. Their interest was in identifying whether or not a student was on a path toward a violent attack, how fast he was moving, and where intervention might have been possible. This study advanced the more dynamic, fact-based approach to threat assessment utilized in earlier work by the same research group (Borum, Fein, Vossekui, & Berglund, 1999; Fein & Vossekui, 1998), in contrast to the more static, trait-based methodology of violence risk assessment that has historically shaped the literature.

Verlinden, Hersen, and Thomas (2000) reviewed the research on juvenile violence and juvenile risk assessment, and conducted an exhaustive analysis of nine adolescent mass murder cases. Five domains were examined. *Individual factors*

indicated uncontrolled anger, depression, blaming others, threatening violence, and having a detailed plan. *Family factors* indicated a lack of parental supervision and troubled family relationships. *School and peer factors* indicated social isolation and rejection by peers, and identification with an antisocial group. *Societal and environment factors* indicated easy access to firearms, a fascination with guns and explosives, and a clustering of events when reported by the media. *Situational and attack related factors* indicated a decline in functioning and a recent loss, stress, or humiliation. Violent intentions were clearly communicated to others, but were not taken seriously. The most common motivations were to obtain justice against peers or adults and to obtain status or importance. Verlinden *et al.* (2000) noted the congruence with the traits highlighted by the FBI and the functional behaviors noted by the U.S. Secret Service, but subject overlap was considerable.

Meloy, Hempel, Mohandie, Shiva, and Gray (2001) conducted a study of 34 adolescents who committed 27 mass murders (using the definition of three or more victims per event) between 1958 and 1999 in North America. The sample consisted of all males with a median age of 17. A majority were described as "loners," and abused alcohol and drugs. Half were bullied by others, preoccupied with violent fantasies and were violent by history. Although one-quarter had a psychiatric history, only two of the adolescents were psychotic at the time of the mass murder. Depressive symptoms and antisocial behaviors were notable in their histories. There was a precipitating event in most cases, usually a failure in school or love; and, even though most subjects made threatening statements to third parties, almost half did not directly threaten their targets beforehand. Most of the sample clustered into three types: the family annihilator (Dietz, 1986), the classroom avenger (McGee & DeBernardo, 1999), and the criminal opportunist. Their study, like all others that have focused upon mass murder to date, was a descriptive, archival study based upon a nonrandom sample interspersed with some clinical interview data gathered by the researchers.

Adolescent mass murder, despite its infrequency—cause of death in 1997 for young persons was most likely to be a motor vehicle accident ($n = 11,863$) and least likely to be an intentional killing in school ($n = 27$)—has spawned several helpful books and articles on threat assessment for parents, teachers, and other professionals (McCann, 2001; Mohandie, 2000; Mulvey & Cauffman, 2001). The rarity of mass murder, however, likely renders any attempt to develop statistical models for its prediction doomed to failure due to very high false positive rates and the absence of large data sets. As Mulvey and Cauffman (2001) noted, violence prediction should be subsumed by violence risk management, which periodically evaluates dynamic factors that increase or decrease risk of a violent incident in individuals already at relatively high risk for violence.

The purpose of this study is to conduct a comparative analysis of a sample of adolescent and adult mass murderers to identify both similarities and differences across static and dynamic factors. Despite obvious chronological and developmental differences between adolescents and adults, perusal of our previously published studies (Hempel *et al.*, 1999; Meloy *et al.*, 2001a) prompted us to take a closer and more careful look from the perspective of threat assessment and risk management (Borum *et al.*, 1999) to advance understanding of this rare and frightening phenomenon.

METHOD

Mass murder was defined as the intentional killing of three or more individuals other than the perpetrator in a single incident. Three of the adult perpetrators in our sample killed in more than one location; two of the adolescents killed in more than one location. We considered each mass murder a continuous event, and if two locations were used, the time period between killings was brief; such a case is referred to as "bifurcated." Although technically our two-location mass murders ($n = 5$) would be considered "spree murders," they are clearly distinguishable from "serial murder," which requires an emotional cooling off period between at least three homicides (Douglas, Burgess, Burgess, & Ressler, 1992).

The nonrandom sample of adult mass murderers was comprised of perpetrators 18 years of age or older, and was limited to individuals who had used a firearm with or without another weapon. Multiple psychiatric, psychological, and criminal databases were searched over the past half century to gather cases that provided sufficient, credible data to complete a codebook.¹ Data sources included scientific articles, videotapes, audiotapes, newspaper articles, and telephone interviews with law enforcement officers, victims, and acquaintances of the perpetrators. Further details concerning methodology are available in the article by Hempel et al. (1999). The adolescent mass murderers were identified using the same methodology as the adults, with the addition of courtroom transcripts, and were limited to individuals 19 years of age or younger who used a firearm, cutting instrument, or blunt object with or without other weapons. Further methodological details are available in the article by Meloy et al. (2001a). Despite the two year age overlap between the samples, there were no duplicated cases.

The samples were compared on variables measured in both studies using descriptive statistics. No inferential statistical analyses were computed due to the lack of controls between the groups: Any statistically significant difference could be due to confounding variables unknown to the researchers other than the age difference, and could have many alternative explanations. Furthermore, there are numerous weaknesses in the use of statistical significance testing, and these become more severe when small samples are involved (Kirk, 1996; Wilkinson & The American Psychological Association (APA) Task Force on Statistical Inference, 1999).

RESULTS

The Offenders

Demographics

Thirty adult mass murderers and 34 adolescent mass murderers were identified who committed their acts in North America between the years 1949 and 1999. The

¹Large scale mass murders in North America, such as the Oklahoma City bombing in 1995 and the World Trade Center/Pentagon attacks in 2001, were excluded by our definition. This research report does not address the offender and offense characteristics of such terrorist attacks, strategically motivated by a desire to spread fear among a large civilian population that witnesses such events (Meloy, 2004; Stein, 2003).

majority of the mass murders were committed after 1985. Data were sufficient to complete the respective codebooks developed by the researchers for both samples. All 64 subjects were males, and three-fourths were Caucasian. The rest were divided among Hispanics, African-Americans, and Asians. Adults ranged in age from 19 to 59, with a mean age of 38.3. The adolescents ranged in age from 11 to 19, with a mean age of 17.

Social Relations

Seventy per cent of the adolescents and 94% of the adults were described as "loners," a term based upon credible biographical data that described the subject as a loner, or described him as showing a marked tendency not to interact with others and to spend most of his time alone.

Preoccupations

Forty-eight per cent of the adolescents and 63% of the adults were preoccupied with weapons or war. This variable was scored when a significant amount of the subject's time revolved around themes of war and violence. Behaviors included owning a large number of weapons such as guns and knives; owning a large number of audio, visual, and reading materials with war, terrorism, or weapons as the main theme; owning and frequently wearing military uniforms and combat fatigues; frequent trips to a gun range; practicing martial arts; excessive verbiage focusing on themes of weaponry and violence; evidence of grandiose fantasies centering on war and weaponry; infatuation with Nazi regalia; idealizing famous fictional and nonfictional violent characters; setting up a gun range in one's home (adults only); infatuation with street gangs (adolescents only); and adopting a nickname associated with a violent or aberrant figure or theme. Such adolescent names included "Bonnie and Clyde," "Damien," "Slicer-Thundercap," and "Reb." Adult names included "50 cal Al" and "Crazy Pat."

Histories of Violence

Forty-two per cent of the adolescents and 43% of the adults had a history of violence. We defined this variable as at least one violent act against a person, animal, or (for adolescents only) property before the mass murder. Violence ranged from assaults or injuries of sexual intimates, family members, neighbors, acquaintances, or strangers to killing a pet or killing a person. The most frequent victim was a female sexual intimate.

Substance Abuse

Sixty-two per cent of the adolescents had a history of substance abuse, including alcohol, marijuana, cocaine, amphetamine, LSD, PCP, inhalants, and heroin. However, there were insufficient data to determine whether substances were used at the time of the mass murders by the adolescents. Among the adult subjects, only 10% consumed alcohol just prior to or during the mass murder.

Psychiatric Histories

Fifty per cent of the adult subjects and 23% of the adolescent subjects had a psychiatric history. The adults typically met criteria for paranoid schizophrenia, delusional disorder, or major depression. Although confidentiality precluded scrutiny of most of the adolescents' psychiatric records, medication records indicated that four of the adolescents were treated with anti-depressants and one was treated with methylphenidate. Sixty-three per cent of the adolescents who killed in schools had depressive symptoms at the time of the crime. However, only 6% ($n = 2$) of the adolescents evidenced signs or symptoms of psychosis (behaviors that inferred the presence of delusions, hallucinations, or loss of contact with consensual reality) at the time of the mass murder. This finding is in stark contrast to the 40% of adult mass murderers who were judged to be psychotic, and the additional 27% who exhibited behaviors suggestive of psychosis. Only one-third of the adult mass murderers showed no evidence of psychotic symptoms at the time of the killings.

Personalities

Narcissistic, antisocial, paranoid, and schizoid personality traits were documented in a majority of the adult mass murderers. Based upon our research, we opined that a majority of the psychotic adult mass murderers also had pre-existing Axis II conditions. We were unable to determine whether such conditions reached the DSM-IV threshold for a diagnosable personality disorder. In our adolescent sample, we likewise found that "odd, reclusive and dramatic acting-out patterns of behavior, perhaps a prelude to adult personality disorder, were suggested by history in a majority of subjects" (Meloy et al., 2001a, p. 721).

Fantasy

The use of fantasy as a compensatory mechanism for the management of actual disappointment, failure, rejection, and humiliation emerged in many adolescent and most adult subjects as an important predisposing offender characteristic. For the adolescents, it appeared to be the transformation of hot shame into cold anger, where for example, the victim of bullying "does not lash out in rage at the time of the felt shame, perhaps because the bully is bigger and stronger, but instead withdraws into a fantasy to compensate for the almost intolerable feelings of a public humiliation, the exposure of the self as weak and ineffectual" (Meloy et al., 2001a, p. 725). We theorized that this fantasy in the context of many adolescent mass murders had several distinctive features: It consumed a large amount of time, it was violent, it contained themes of grandiosity and persecution, and it provided a vehicle for the adolescent to identify with the aggressor (Freud, 1936). We inferred this fantasy structure from the subjects' violent histories, arrest histories, preoccupations with war and weaponry, and nicknames related to violent characters, rebellion, or aberration.

For the adult mass murderers, we termed this compensatory fantasy a "warrior mentality." This self-representation appeared to be rooted in similar real world humiliations, rejections, and failures, and had two defensive aspects: an identification

with aggression and authority, and an emotional fueling of grandiosity and omnipotent control. These two facets of pathological narcissism could for a brief moment be translated into a violent reality. We inferred this “warrior mentality” in the adults from the empirical findings of Cluster B personality traits, military service, a violent history, a fascination with weapons and war regalia, the absence of direct threats, the absence of alcohol use during the killings, the target selection, and the predatory nature of the mass murder (see below). Both the adolescents and adults use such compensatory narcissistic defenses (manifested as conscious fantasies), but for the adults they appear to more specifically structure their self-identity, perhaps a product of developmental maturity.

The Offense

Threats

In 66% of the adult mass murders and 58% of the adolescent mass murders, verbal or written threatening statements were made, usually to third parties. These threats were specific (location, victims, time); generalized (no location or victim); or mixed. One adolescent threatened with the words, “Don’t be in school tomorrow.” Another adult threatened, “I’m going hunting.” In 42% of the adolescent mass murders and in 80% of the adult mass murders, there was no direct threat communicated to the targets beforehand (false negative rate). “Leakage” was therefore much higher among the adolescents.

Precipitating Events

Fifty-nine per cent of the adolescents and 90% of the adults had a precipitating or triggering event before the mass murder. We defined such an event as “significantly mentally or emotionally disturbing to him, or...obvious from scrutiny of the perpetrator’s history” (Meloy *et al.*, 2001a, p. 722). Such events for the adolescents included the loss of a real or fantasy relationship with a girl, a family dispute, suspension from school, insults by peers, termination from a job, anger over hospitalization, a physical injury, and denial of entry into the military. Adult triggers included termination from a job or envy over another’s promotion, bankruptcy, confrontation by an employer, actual or perceived abandonment by a sexual intimate, jealousy, erotomanic beliefs, child support issues, or property damage or trespass. Most precipitants occurred within hours or days of the mass murder, although direct causality could not be established.

Psychological Abstracts

We constructed this variable and defined it as “the sentence or words uttered immediately prior to, or during the mass murder” by the perpetrator. It is usually said in a loud voice, and we think it provides insight into the subject’s conscious intent and motivation for the killings. When we had sufficient data to determine presence or absence, one-third of both the adults and adolescents produced a

Table 1. Some psychological abstracts produced by adolescent ($n = 34$) and adult ($n = 30$) mass murderers

Adolescents	Adults
"I'll see you in hell!"	"Here's for all the bitches at Belton!"
"I've had a bad day."	"Now you pay!"
"Police, everybody down. Let's kill em."	"This is for the feminists!"
"This ends now."	"Take that bitch!"
"I'm sorry."	"This is war!"
"Today's a good day to die. We're gonna die"	"Happy New Year pigs!"
"Jocks, get up."	"The people here have ruined my life."
	"I told them I would be back. Back off and get out of the way!"

"psychological abstract." Some of these abstracts are listed in Table 1 for comparative purposes.

Weapons Used

Multiple weapons were brought by the subject to the mass murder. The adults averaged 3.1 weapons (range 1–11). The adolescents averaged 2.4 (range 1–7). The most frequent caliber of firearm used by the adults was 9 mm, while the adolescents most frequently used a 0.22 caliber handgun. Assault rifles were used in one-third of the adult mass murders, most commonly the 7.62 mm AK 47. One adult subject used a 0.50 caliber Grizzly Big Boar single shot rifle mounted on a bipod and scoped (Meloy, 1997). Both groups used semi-automatic rifles and pistols, revolvers, bolt-action rifles, shotguns, earplugs, homemade bombs, Samurai swords, and an ax. The adults exclusively used black talon bullets, silencers, gas masks, bulletproof vests, hand grenades, and binoculars. The adolescents exclusively used baseball bats, a hammer, and kitchen knives. The adolescent subjects either stole their weapons, purchased them, took them from home, or borrowed them for the event.

Mode of Violence

Violence can be classified as either predatory or affective (Meloy, 1988). Others refer to predatory violence as instrumental or premeditated, and affective violence as reactive or impulsive (Barratt, Stanford, Felthous, & Kent, 1997; Cornell et al., 1996). Predatory violence is planned, purposeful, and emotionless, with minimal levels of autonomic arousal. It is an attack behavior. Affective violence is accompanied by high levels of autonomic arousal, anger or fear, and is a response to an imminent threat. It is defensive behavior. Thirty years of research support a psychobiological distinction between predatory and affective modes of violence in humans and other mammals (Mirsky & Siegel, 1994), including recent neuroimaging and neuropsychological studies (Kockler, 2003 unpublished doctoral dissertation; Raine et al., 1998). Scrutiny of all the clinical and forensic data on the adult and adolescent murders indicates that they are acts of predatory, rather than affective, violence. Two gross measures of predatory violence include the documented planning and preparation for days, weeks, or months, sometimes recorded

by the perpetrators and typically observed by others; and the absence of emotion observed by surviving witnesses in the affect, posturing, and movement of the perpetrators while committing their mass murders.

Morbidity and Mortality

The 64 adolescent and adult mass murderers in our samples killed 381 individuals and wounded 312 individuals for an average casualty rate of 10.8 individuals per subject. Each adolescent mass murder event averaged 4.7 killed and 3.1 wounded. The adult mass murders averaged 8.5 killed and 7.6 wounded, almost double the casualty rate of the adolescent events. The *psychotic* adult mass murderers averaged nearly twice as many deaths (11) as the nonpsychotic adults (6.5). All the adult subjects acted alone, although one out of four adolescents killed in pairs. When the event involved more than one adolescent perpetrator, the average deaths increased to 5.1. When a bifurcated mass murder occurred, the first victims were always family members (spouse, child, parent, or sibling) killed with a knife or blunt object, and then the subject moved to another location to continue killing with a firearm. The lethality rate for all familial or intimate killings in both groups was 100%.

Relationship of Victim to Perpetrator

In 81% of the adolescent mass murders, the subjects knew all their victims; in only half of the adult mass murders did the subjects know the victims. In one-fourth of the adult incidents, all the victims were strangers, and in each of these incidents the subject was psychotic at the time. The psychotic adult was thus substantially more likely to kill strangers than the nonpsychotic adult.

Timing

The majority of the adult mass murderers killed in the morning; the majority of the adolescent mass murderers killed in the afternoon. The median lapsed time of an adult mass murder was 20 minutes. We had insufficient data to determine lapsed time for the adolescents (although Vossekul *et al.*, 2000, reported that half their adolescent incidents lasted 20 minutes or less).

Offender Survival Rate

Two-thirds of the adult mass murderers committed suicide or were killed by police. Only one out of seven adolescent mass murderers committed suicide or were killed by the police.

DISCUSSION

Knowledge *per se* is good, for instance, if one is devoted to epistemology or pure science. But does the gradual accumulation of applied knowledge concerning mass

murder have any value when the behavior will never be predicted due to its rarity? We certainly think so, if the data are approached from the perspective of threat assessment: Can we discern dynamic factors that will mark the pathway toward mass murder in a group of individuals who are already at risk for violence?

The threat assessment approach has been pioneered by Fein, Vossekuil, and Holden (1995), Fein and Vossekuil (1998, 1999), and Borum et al. (1999) in their research concerning targeted violence toward public figures in the United States: specifically, the U.S. Secret Service discharging their responsibility toward the President and other identified protectees. It is a fact-based, behavioral, and functional approach that “looks at pathways of ideas and behaviors that may lead to violent action” (Borum et al., 1999, p. 327). We would add the word *emotion* to this definition, since we think it is often central to understanding the motivation for targeted violence, can often be inferred from both verbal and nonverbal behaviors before the event, and is dynamic.

Borum et al. (1999) define dangerousness or “risk” in their model as contextual (dependent on situation), dynamic (changeable), and continuous (varying in probability). They eschew more static, trait-based methods of profiling certain groups of individuals as potentially violent when attempting to manage the risk of low base rate, targeted violent acts. We think their work is extremely valuable in understanding both adolescent and adult mass murder, and approach the findings in our research through the lens of their ten investigative questions.

1. *What motivated the subject to make the statements or take the action that caused him to come to attention?* The motivation for mass murder is likely overdetermined, consciously articulated, and partially driven by thoughts, feelings, and fantasies completely unknown to the perpetrator. From an investigatory perspective, the words of the subject, both oral and written, may capture the conscious intent (illustrated in Table 1), but may also mask the derivative emotions, such as anger, shame, grief, dysphoria, or envy, that result from his loss in love or in work or school. We emphasize that, despite the nomothetic findings we have outlined, *each subject will be different*, and sensitive investigation can uncover, and perhaps change, the myriad of thoughts and feelings that may be initiating the planning of a mass murder.

The ages of the adolescent and adult mass murderers are also instructive. Both signal a major transitional period and a heightened risk for certain psychiatric disorders. The adolescents averaged 17 years of age, a time of late adolescence when separation from the nuclear family, the establishment of an occupational or career path, and the search for an intimate partner pose both opportunities and potential crises. The adults averaged 38 years of age, the time of entry into middle adulthood when success or failure at building a core life structure (love and work) becomes more evident, and portends a future of hope or despair. In our adolescent study we noted the quadrad of loner status, victimization by bullying, broken families, and violent fantasy preoccupation to elucidate some of the psychosocial characteristics of the subjects (Meloy et al., 2001a). In some ways the adult subjects also fit this model—a sense of persecution, in many cases overt paranoia, replaces bullying, estrangement and failure characterize his sexual pair bonds, and a “warrior mentality” is structured to compensate for a deteriorating life course.

We also think that both predisposing (chronic) and precipitating (acute) factors are salient aspects of the motivation for mass murder and useful concepts to

structure a threat assessment. A developing “warrior mentality” in an adult, or an accelerating fascination with weapons and war in an adolescent, may only need a precipitating event, such as a sudden humiliation in the workplace or school, to implement an already incubating plan for mass murder. In a real sense, the climate is set for a sudden storm to appear on the horizon (Monahan & Steadman, 1996). Climates can be noticed, and in some cases may be altered. Sudden storms catch everybody off guard.

2. *What has the subject communicated to anyone concerning his/her intentions?* Both adult and adolescent mass murderers usually do not communicate a written or oral threat directly toward their targets prior to the killings, although adolescents are more likely to do so. Paradoxically, in the majority of cases both groups do communicate their intent to third parties. Although direct threats should not be ignored, and all threats should be taken seriously, *posing* a threat in mass murder pre-offense behavior does not require that an articulated threat be made to anyone. Our research indicates that “leakage” is much more common among adolescents, consistent with the findings of O’Toole (2000) and Vossekul et al. (2000). In our study, as in theirs, leakage involved not only communication to the target, but most likely to other students or peers rather than adults. Articulated threats to third parties in both groups were either angry utterances, bragging comments to support a flagging self-esteem, invitations to be understood before the act, an attempt to sway a decision (e.g., whether or not he was to be fired), a warning to save a particular individual, or a plea for help. We concur with the U.S. Secret Service recommendations that the school climate must foster open channels of communication between students and adults, and that interviews with the peers of the student of concern be done efficiently, effectively, and discreetly.

The mode of violence likely plays an important role in the absence of a direct threat being communicated to the targets beforehand, particularly for the adult mass murderers. The distinctive biology of predatory violence—low autonomic arousal and the absence of intense emotion—serves the hunt: It provides a tactical advantage by not alerting the target to the imminency of attack, as does the absence of a direct threat. Predatory violence was originally an evolved adaptation of our species for obtaining food that now occasionally finds psycho-pathological expression in various acts of targeted violence, such as the stalking of public figures (Fein & Vossekul, 1999; Meloy, 2001), bombing (Meloy & McEllistrem, 1998), suicide-homicide attacks motivated by religious or political beliefs (Meloy et al., 2001b), and the general violence of psychopaths (Cornell et al., 1996). Affect during a mass murder may be completely repressed or consciously suppressed, the latter evident in the emotion contained in some of the “psychological abstracts” (see Table 1).

3. *Has the subject shown an interest in targeted violence, perpetrators of targeted violence, weapons, extremist groups, or murder?* Both adolescent and adult mass murderers evidence a long-term preoccupation with weapons and war. Behaviors range from ownership of a large number of weapons, to accumulation of military or paramilitary items associated with war, to more fantasy-based aggressive immersion in screen violence: passive or interactive viewing of violent television, movies, videos, DVDs, computer games, or visiting video arcades. In many cases such immersion serves to distract the individual from softer, more vulnerable, and perhaps more painful feelings and thoughts. Defensive identifications are thus fostered with hard and

aggressive objects, whether they be the weapons themselves, or real life characters that have preceded them and carried out similar acts (Meloy & Mohandie, 2001). This long-term, relatively chronic pattern is evident across all the studies of both adolescent and adult mass murderers we have reviewed.

Movement toward the killings, however, may be manifest in two ways: one is an "accelerant" pattern in which interest quickly evolves into fascination or preoccupation with violence and weapons, and there is a desire or behavior to accumulate more, and more lethal, weapons. In the second pattern, the interest becomes suffused with personal fantasy and identity, often grandiose, and is behaviorally suggested by the accumulation of symbolic weapons that have no practical use, the idolization of violent fictional or nonfictional characters, and attempts to dress or act like such characters with associated nicknames. These latter behaviors may be part of a "copycat" or contagion effect, also referred to as media-related modeling (Cantor et al., 2000). Only limited research has been focused on this phenomenon in relation to both homicide and suicide (Bollen & Phillips, 1982; Phillips, 1983).

4. *Has the subject engaged in attack-related behavior, including any menacing, harassing, and/or stalking type behavior?* Both adolescent and adult mass murderers in our study have almost identical frequencies of violence in their past, approaching 50%. This finding is not consistent with the work of Cantor et al. (2000) and their study of seven mass murderers in Australia, New Zealand, and Britain, or the work of McGee and DeBernardo (1999). It is somewhat consistent, however, with the studies of "school shooters" (O'Toole, 2000; Vossekul et al., 2000), which indicate that the students engaged in behaviors prior to the attack that raised concerns among those around them, including illegal and antisocial acts to advance the planning for the mass murder. This was supported in many cases by a turbulent family environment in which pathological behaviors were treated as normal, weapons were carelessly available around the home, and there was a lack of both intimacy and discipline among family members (O'Toole, 2000). Although we did not code specifically for harassing or stalking behavior, the extent of organized behaviors for weeks or months prior to the mass murders was striking and consistent, often following a predictable course of planning, preparation, and implementation (Calhoun & Weston, 2003). The histories of violence for our subjects may also make it easier to kill, as they add a realistic dimension to chronically violent fantasies, allow for practicing against actual targets, and normalize violence as a coping mechanism.

5. *Does the subject have a history of mental illness involving hallucinations, delusions, or feelings of persecution, with indications that the subject has acted on those beliefs?* The data here diverge for the adolescents and the adults. The majority of the adult mass murderers were clearly or suggestively psychotic at the time of the killings, with histories of mental illness that revolved around paranoia or depression. As Cantor et al. (2000) wrote of their own sample, "They were mostly men who perceived themselves as having been unjustly treated by others. They displayed a marked sense of entitlement . . . The picture that emerges from these mass killers is less one of sadness or depression and more one of resentment and despair" (p. 62). In our adult sample (Hempel et al., 1999), there was a gross demarcation between the paranoid murderers who killed larger numbers of strangers, and the depressed murderers who killed fewer people usually known to them. A psychological nexus also emerged

among those diagnosed with paranoid disorder, the behavioral observation of signs and symptoms of persecution at the time of their mass murders, and the psychological abstracts that were yelled by them (Table I). All suggest the use of projection and projective identification by the subject, wherein the targets are perceived as both malevolent and threatening *toward* the perpetrator. Among the motivations of the paranoid subjects, we also found a desire to pre-emptively strike against those who might attack him or the angry incubation of perceived slights, insults, and humiliations over time, in some cases years, which are then condensed into one act of retaliation against a paranoid pseudo-community (Cameron, 1959), the perceived source of all his troubles.

The adolescents were quite different. A significant proportion (one out of four) had a psychiatric treatment history, yet only two were judged to be psychotic at the time of the killings. Although the adolescents are killing at a developmental time that typically precedes the onset of major mental disorder (Kaplan & Sadock, 1998), the prominent psychiatric vulnerabilities suggested in our data were depression tinged with suspicion for the "classroom avengers" and pre-offense antisocial behaviors for the "family annihilators" and the "criminal opportunists." The fact that one out of four adolescents killed in pairs also contraindicates psychosis. As we wrote, "adolescent mass murder is personal, and given the absence of psychosis, the intent and motivation are grounded in real object relations, not deluded ones" (Meloy *et al.*, 2001a, p. 726). O'Toole (2000), Vossekui *et al.* (2000), Verlinden *et al.* (2000), and McGee and DeBernardo (1999) found similar results, and emphasized clinical depression. Vossekui *et al.* (2000) found that nearly three-fourths of their sample threatened to kill themselves, made suicidal gestures, or actually tried to kill themselves before their mass murders. McGee and DeBernardo (1999) hypothesized a diagnosis of atypical depression. Verlinden *et al.* (2000) found uncontrolled anger and depression in 80% of their cases, and O'Toole (2000) noted signs and symptoms of depression as common among their "school shooters." In virtually all cases of adult and adolescent mass murder, psychiatric treatment was either unavailable or underutilized, particularly in the weeks or months preceding the killings (see Fein & Vossekui, 1998, for a comparable finding among assassins and attackers of public figures). Mass murder may be what Cantor *et al.* (2000) referred to as an extended atypical form of suicide.

Actual suicide at the time of the mass murder, however, was strikingly less frequent for the adolescents (9%) than the adults (53%). This may be partially explained by the adolescents' inexperience with actual violence and death compared with the adults, and the common observation of genuine shock, tearful emotion, and disbelief among the adolescent perpetrators when first taken into custody. Very few adolescents continued their rampage once they were confronted by the police.

We would be remiss, however, if we did not emphasize that most people who are depressed do not kill others. Ubiquitous throughout our data for both the adolescents and the adults is a pathologically narcissistic belief that they had a *right* to kill others, a sense of entitlement that may have been exacerbated by the porcupine quills of paranoia or the suffocating blanket of depression. Such feelings and attitudes, however, still need to be hardened by a shell of callousness to be acted upon.

6. *How organized is the subject? Is he capable of developing and carrying out a plan?* All of the adolescent and adult subjects had the ability to carry out an organized plan and

did so. This finding is very robust across previous research and challenges two assumptions made by some law enforcement and mental health professionals. First, the assumption that mass murder is a sudden, impulsive act wherein an individual “snaps” and kills those around him is fallacious. There is no evidence, given the parameters of the mass murder research to date, that such a phenomenon occurs, and data instead support the hypothesis that mass murder is a planned and organized event, at least until the killing begins. Planning and preparation likewise appear to be necessary components of most targeted violence (Calhoun, 1998; Fein & Vossekuil, 1998, 1999; Meloy, 2001). Second, the presence of certain or probable psychosis in two-thirds of the adult mass murderers contradicts the assumption that psychotic individuals cannot engage in organized behavior. In fact, we have found that active delusions will often bring a certainty and resolve to the planning of a mass murder that, in their absence, would be marked by ambivalence. The lack of an ability to organize behavior, however, would obviously reduce the risk of targeted violence. Such a conclusion should only be drawn when evidence of such disorganization is substantial.

7. *Has the subject experienced a recent loss and or loss of status, and has this led to feelings of desperation and despair?* Borum et al. (1999) recommended the scrutiny of recent material, relational, or status loss in four domains: family, intimate/peer, occupational, and self-image. Critical to their analysis was the reaction to the loss, and whether it led to desperation and despair.

Among adolescent and adult mass murderers, a significant loss was present in the majority of subjects in the hours, days, or weeks preceding the killings. It was typically relational or status loss, and involved a close relationship or narcissistic injury, or both. Other researchers have also consistently found such losses and hypothesized that they precipitated the mass murder. They are variously described as, “a major change to a significant relationship or a loss of status” (Vossekuil et al., 2000, p. 8), a “recent relational loss, stressful event, or loss of status” (Verlinden et al., 2000, p. 45), a “frustrating or disappointing experience, a setback, or putdown” (O’Toole, 2000, p. 17), and “a loss of social supports (or) a loss of key elements that maintained their sense of identity” (Cantor et al., 2000, p. 61). We note, however, that such losses are common throughout normal life, and the focus of threat assessment must be upon the subject’s response to the loss. Our research and that of others consistently indicate that, in the case of mass murder, losses stimulated feelings of anger and projection of blame, likely the result of a sensitivity to shame and envy in a population that is identified by all researchers as strikingly narcissistic.

Bullying is an illustrative example. Vossekuil et al. (2000) emphasized that bullying appeared to play a major role in motivating their school attackers, a conclusion we also reached (Meloy et al., 2001a). But we also noted that *most* students report being bullied at least once, and 14% of boys and girls suffer severe trauma from bullying abuse (Hoover, Oliver, & Hazler, 1992). Predicting that severely traumatized victims of bullying will all become adolescent mass murderers is obviously wrong for several reasons. First, it neglects the role of compromised or impaired coping in the murderer, who, for a variety of reasons, has exhausted or is unwilling to enlist prosocial solutions for his problems. Second, it does not consider the compensatory violent fantasies that we discussed earlier as a maladaptation to being bullied. Such fantasies appear to initiate or advance the idea

of mass murder, a thought as experimental action (Freud, 1911), which eventually motivates a behavioral tryout. In the adult mass murderer, these fantasies constellate in a representation of the self as a “warrior” (Hempel *et al.*, 1999; Cantor *et al.*, 2000).

8. *Corroboration—What is the subject saying and is it consistent with his actions?* The credibility and plausibility of the subject’s statements, whether written or verbal, is a threat assessment method that involves the corroboration of the subject’s pre-offense behavior through the interviewing of collaterals. The retrospective study of both adolescent and adult mass murder cases yields a striking fact: There was often pre-offense knowledge of specific and generalized threats among third parties, and they failed to act to prevent the killings. Vossekuil *et al.* (2000) noted that in half their cases the attackers were influenced or encouraged by others, and in 75% of the cases other students knew about the attack before it occurred.

The passivity of third parties, whether in school or in the workplace, may be an institutional failure (O’Toole, 2000). From a psychological perspective, it is likely the defensive use of denial, minimization, and rationalization as a means of managing the upsurge of anxiety when one becomes privy to knowledge of an imminent mass murder. Anecdotally, throughout our research, most people who had overheard a threat seemed to have dismissed it as incredible or implausible. We think such knowledge can be discovered through assertive and time-sensitive investigations.

9. *Is there concern among those that know the subject that he might take action based on inappropriate ideas?* One of us (JRM) consulted on a mass murder case in which a 38 year old paranoid schizophrenic male killed two mental health workers in a clinic, and one manager in a restaurant, delusionally believing they were all involved in an FBI conspiracy to trespass on his property, spy on him, and poison his water. During the preceding year, family members, friends, and mental health clinicians strongly advocated for his hospitalization out of fear of his violence, but his treating psychiatrist did not believe there was sufficient evidence for involuntary treatment.

In yet another case (KM) involving a post office mass murder, coworkers of a threatening future mass murderer who were frustrated by the institution’s inability to deal with their reported concerns took turns watching him when he arrived at work, “just in case.” If he brought coffee and donuts, then it was assessed as safe that day. Unfortunately, when the perpetrator finally did carry out his mass murder, he used the coffee and donut containers to conceal his weapons.

Cantor *et al.* (2000) wrote, “A deteriorating life course, combined with chronic resentment and fantasies, appears to have contributed to each of these men having reached a critical threshold for mass homicide” (p. 61). Others will notice, and will express concern if asked about the subject, even if they have no affectional relationship with him. Monahan *et al.* (2001) have empirically demonstrated the critical importance of collateral data in the retrospective and prospective analysis of violence risk.

10. *What factors increase or decrease the likelihood of an attack?* Borum *et al.* (1999) emphasized that destabilizing factors in an individual’s life may be useful opportunities for intervention. The risk factors, both static and dynamic, for mass murder are replete with intervention possibilities: Deteriorating psychiatric conditions may

be ameliorated with voluntary or involuntary psychiatric treatment; chronic personality disorders may be both directly and indirectly assessed for severity of paranoia and psychopathy, and therefore risk of violence; the accumulation of firearms can be prosecuted in cases of individuals who are underage, who have a criminal history, or who have been psychiatrically committed as a danger; flagging social and affectional bonds can be buttressed through school counseling or human resource interventions in the workplace or elsewhere; and illicit drug use, a particularly acute risk factor for all adolescent violence, can be treated or prosecuted. These are only a few examples of risk factors that contain protective interventions within themselves.

CONCLUSIONS

Adolescent and adult mass murder is a very low-frequency and high-intensity event in North America. Its risk is most usefully measured through the fact-based, dynamic threat assessment of a particular subject of concern (Borum et al., 1999). This approach identifies and risk manages the cognitive, emotional, and behavioral markers along the path toward violence, and the speed at which those markers are being crossed. The research is quite limited at present, but yields some consistent data that define this cruel, unusual, and lethal form of targeted violence.

REFERENCES

- Barratt, E., Stanford, M., Felthous, A., & Kent, T. (1997). The effects of phenytoin on impulsive and premeditated aggression: A controlled study. *Journal of Clinical Pharmacology*, *17*, 341–349.
- Benedek, E., & Cornell, D. (Eds.). (1989). *Juvenile homicide*. Washington, DC: American Psychiatric Press.
- Bollen, K., & Phillips, D. (1982). Imitative suicides: A national study of the effects of television news stories. *American Sociological Review*, *47*, 802–809.
- Borum, R., Fein, R., Vossekuil, B., & Berglund, J. (1999). Threat assessment: Defining an approach for evaluating risk of targeted violence. *Behavioral Sciences and the Law*, *17*, 323–337.
- Calhoun, F. (1998). *Hunters and howlers: Threats and violence against federal judicial officials in the United States, 1789–1993*. Arlington, VA: US Marshals Service.
- Calhoun, F., & Weston, S. (2003). *Contemporary threat management*. San Diego: Specialized Training Services.
- Cameron, N. (1959). The paranoid pseudo-community revisited. *American Journal of Sociology*, *65*, 52–58.
- Cantor, C., Mullen, P., & Alpers, P. (2000). Mass homicide: The civil massacre. *Journal of the American Academy of Psychiatry and the Law*, *28*, 55–63.
- Chester, G. (1993). *Berserk: Motiveless random massacres*. London: O'Mara.
- Cornell, D., Warren, J., Hawk, G., Stafford, E., Oram, G., & Pine, D. (1996). Psychopathy in instrumental and reactive violent offenders. *Journal of Consulting Clinical Psychology*, *64*, 783–790.
- Dietz, P. (1986). Mass, serial, and sensational homicides. *Bulletin of the New York Academy of Medicine*, *62*, 477–491.
- Douglas, J., Burgess, A., Burgess, A., & Ressler, R. (1992). *Crime classification manual*. New York: Lexington.
- Fein, R., & Vossekuil, B. (1998). Preventing attacks on public officials and public figures: A Secret Service perspective. In J. R. Meloy (Ed.), *The psychology of stalking: Clinical and forensic perspectives* (pp. 175–191). San Diego: Academic.
- Fein, R., & Vossekuil, B. (1999). Assassination in the United States: An operational study of recent assassins, attackers, and near-lethal approachers. *Journal of Forensic Sciences*, *44*, 321–333.
- Fein, R., Vossekuil, B., & Holden, G. (1995). *Threat assessment: An approach to prevent targeted violence* (NCJ 155000). Washington, DC: U.S. Department of Justice, Office of Justice Programs, National Institute of Justice.

- Fessenden, F. (2000). They threaten, seethe and unhinge, then kill in quantity. *The New York Times* April 9, p. 1.
- Freud, A. (1936). *Ego and the mechanisms of defense*. New York: International Universities Press.
- Freud, S. (1911/1946). Formulations regarding the two principles in mental functioning. *Collected papers* (Vol. IV, pp. 13–21). London: Hogarth.
- Hempel, A., Levine, R., Meloy, J. R., & Westermeyer, J. (2000). A cross-cultural review of sudden mass assault by a single individual in the Oriental and Occidental cultures. *Journal of Forensic Sciences*, 45, 582–588.
- Hempel, A., Meloy, J. R., & Richards, T. (1999). Offender and offense characteristics of a nonrandom sample of mass murderers. *Journal of the American Academy of Psychiatry and the Law*, 27, 213–225.
- Holmes, R., & Holmes, S. (1992). Understanding mass murder: A starting point. *Federal Probation*, 16, 53–61.
- Hoover, J., Oliver, R., & Hazler, R. (1992). Bullying: Perceptions of adolescent victims in the midwestern USA. *School Psychology International* 13, 5–16.
- Kapardis, A. (1989). *They wrought mayhem: An insight into mass murder*. Melbourne: River Seine.
- Kaplan, H., & Sadock, B. (1998). *Synopsis of psychiatry* (8th ed.). Baltimore, MD: Lippincott, Williams and Wilkins.
- Kelleher, M. (1997). *Flash point: The American mass murderer*. Westport, CT: Praeger.
- Kirk, R. E. (1996). Practical significance: A concept whose time has come. *Educational and Psychological Measurement*, 56, 746–759.
- Kockler, T. (2003). Differences in executive functioning in a group of incarcerated predatory and affective male murderers. Unpublished doctoral dissertation. San Diego: California School of Professional Psychology.
- Lane, B., & Gregg, W. (1994). *The encyclopedia of mass murder*. London: Headline.
- Levin, J., & Fox, J. (1985). *Mass murder*. New York: Plenum.
- Leyton, E. (1996). *Hunting humans*. Ontario: McClelland and Stewart.
- McCann, J. (2001). *Threats in schools: A practical guide for managing violence*. New York: Haworth.
- McGee, J., & DeBernardo, C. (1999). The classroom avenger. *Forensic Examiner*, 8, 16–18.
- Meloy, J. R. (1988). *The psychopathic mind*. Northvale, NJ: Aronson.
- Meloy, J. R. (1997). Predatory violence during mass murder. *Journal of Forensic Sciences*, 42, 326–329.
- Meloy, J. R. (2001). Communicated threats and violence toward public and private targets: Discerning differences among those who stalk and attack. *Journal of Forensic Sciences*, 46, 1211–1213.
- Meloy, J. R. (March 2004 in press). Indirect personality assessment of the violent true believer. *Journal of Personality Assessment*, 82, 138–146.
- Meloy, J. R., Hempel, A., Mohandie, K., Shiva, A., & Gray, T. (2001a). Offender and offense characteristics of a nonrandom sample of adolescent mass murderers. *Journal of the American Academy of Child Adolescent Psychiatry*, 40, 719–728.
- Meloy, J. R., & McEllistrem, J. (1998). Bombing and psychopathy: An integrative review. *Journal of Forensic Sciences*, 43, 556–562.
- Meloy, J. R., & Mohandie, K. (2001). Investigating the role of screen violence in specific homicide cases. *Journal of Forensic Sciences*, 46, 1113–1118.
- Meloy, J. R., Mohandie, K., Hempel, A., & Shiva, A. (2001b). The violent true believer: Homicidal and suicidal states of mind. *Journal of Threat Assessment*, 1, 1–14.
- Mirsky, A., & Siegel, A. (1994). The neurobiology of violence and aggression. In A. Reiss, K. Miczek, & J. Roth (Eds.), *Understanding and preventing violence. Vol. 2. Biobehavioral influences* (pp. 59–111). Washington, DC: National Academy Press.
- Mohandie, K. (2000). *School violence threat management*. San Diego: Specialized Training Services.
- Monahan, J., & Steadman, H. (1996). Violent storms and violent people: How meteorology can inform risk communication in mental health law. *American Psychologist*, 51, 931–938.
- Monahan, J., Steadman, H., Silver, E., Appelbaum, P., Robbins, P., Mulvey, E., Roth, L., Grisso, T., & Banks, S. (2001). *Rethinking risk assessment*. New York: Oxford University Press.
- Mulvey, E., & Cauffman, E. (2001). The inherent limits of predicting school violence. *American Psychologist*, 56, 797–802.
- O'Toole, M. E. (2000). *The school shooter: A threat assessment perspective*. Quantico, VA: Critical Incident Response Group, FBI Academy, National Center for the Analysis of Violent Crime.
- Phillips, D. (1983). The impact of mass media violence on US homicides. *American Sociological Review*, 48, 560–568.
- Raine, A., Meloy, J. R., Bihrie, S., Stoddard, J., LaCasse, L., & Buchsbaum, M. (1998). Reduced prefrontal and increased subcortical brain functioning assessed using positron emission tomography in affective and predatory murderers. *Behavioral Sciences and the Law*, 16, 319–332.
- Stein, J. (2003). *Terror in the name of God: Why religious militants kill*. New York: HarperCollins.
- Time-Life Books. (1992). *Mass murderers*. Alexandria, VA: Author.
- Verlinden, S., Hersen, M., & Thomas, J. (2000). Risk factors in school shootings. *Clinical Psychology Review*, 20, 3–56.

- Vossekuil, B., Reddy, M., Fein, R., Borum, R., & Modzeleski, M. (2000). *USSS safe school initiative: An interim report on the prevention of targeted violence in schools*. Washington, DC: US Secret Service, National Threat Assessment Center.
- Westermeyer, J. (1973a). Grenade-amok in Laos: A psychosocial perspective. *International Journal of Social Psychiatry*, *19*, 251–260.
- Westermeyer, J. (1973b). On the epidemicity of amok violence. *Archives of General Psychiatry*, *28*, 873–876.
- Wilkinson, L., & The American Psychological Association (APA) Task Force on Statistical Inference. (1999). Statistical methods in psychology journals: Guidelines and expectations. *American Psychologist*, *54*, 594–604 (reprint available at www.apa.org/journals/amp/amp548594.html).