

# MASS MURDER

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## Introduction

### Mass Murder

The term “mass murder” may mean different things to different people. It has been applied to as diverse situations as Whitman Texas Tower shootings, the mass poisonings in Jonestown, Jack the Ripper’s murders, the Holocaust, Bhopal industrial disaster, Oklahoma bombings, World Trade Center attacks, the practice of euthanasia, and even the current liberal abortion policy around the world. The Federal Bureau of Investigation (FBI) Academy’s Behavioral Science Unit at Quantico, Virginia, however, defines “mass murder” as the killing of four or more victims in a “single location” and in a “single event,” with no emotional cooling-off period in between. The event is typically unplanned and unexpected. Killings of lesser numbers of victims have been given separate terminologies. Thus, killing of one victim is called a “single homicide,” two victims at one time in one location is called a “double homicide,” and three victims at one time in one location is a “triple homicide.” Most authorities now believe that triple homicide should be treated as mass murder too. A few would even include a double homicide among mass murders. Thus Dion Terres, who killed two people and wounded a third at a McDonald’s restaurant in Racine, Wisconsin, USA on August 10, 1993, is frequently classified as a mass murderer by many authorities. Similarly, Steven Benson of Florida, who set up a bomb in his car to kill his mother and adopted brother, on July 9, 1985, is also classified as a mass murderer. It is often the intention that counts. Benson had intended to kill a third victim – his sister Carol Lynn – but she survived the explosion.

Typically a mass murderer walks into a government office, restaurant, shopping mall, school playground, or other such public place and begins randomly shooting innocent bystanders. He usually commits suicide after his killing incident, or puts himself in such a situation that the police have to kill him – the so-called suicide by cop. A typical mass murderer is a loner male, with chronic extreme anger, paranoid ideation, and depressed mood. He kills in order to gain a brief moment of control by controlling the fate of others.

### Serial Murder

An emotional cooling-off period is what differentiates a mass murderer (and spree murderer) from a serial murderer. “Serial murder” is defined as the killing of three or more persons in three or more separate events in single (when the killer returns to the same place to kill) or multiple locations, with an emotional cooling-off period between homicides. This emotional cooling-off period may last from a few hours to years. The serial killer premeditates his crimes, fantasizing and planning the murders in detail. He also selects his victim, usually a targeted stranger he has been stalking before the murder.

A serial killer usually goes after strangers, but the victims tend to share similarities such as gender, age, or occupation. Though he prefers a certain look or background, if he can’t find his intended target, he will often substitute it with another victim.

The minimum number of killings which would qualify for the cluster of homicides being classified as a serial murder is a matter of controversy. Many authorities believe that killing two people in two different events should be enough to constitute a serial killing.

### Spree Murder

A third type of multiple murder is the “spree murder,” which is defined as the killing of three or more people (the number of killings is also controversial here) in a single event with no emotional cooling-off period in between, but at two or more different locations. The single event can be of short or long duration. In the case of Howard Unruh (Table 1), all killings and woundings took place in about 20 min. Charles Whitman, in comparison, killed over a period of several hours. On the night of July 31, 1966, he went to his mother’s apartment (location 1) where he shot her; then returned to his house (location 2) and stabbed his wife to death (on August 1 at about 3.00 a.m.). He left his house at 9.00 a.m. the same day, and climbed up a 92-m (307-ft) clock tower at the university of Texas (location 3), where he started firing at 11.45 a.m. and continued shooting till around 1.20 p.m. In the tower, he killed an additional 15 people. The homicidal event in this case lasted almost a day, but since there was no emotional cooling-off period between the killings, it is classified as a spree murder.

A kind of hybrid is also known to exist, the spree serial killer, where the murders occur within a shorter time span than is usually taken by serial killers.

**Table 1** Differences between various forms of multicides

| Type of multicide | Time of murders (variable 1)  | Location (variable 2) | Typical example  | Year/day  | Persons killed  |
|-------------------|---|-----------------------|--|---|---|
| Mass murder       | Same (no emotional cooling-off period)  | Same                  | Crown Prince Dipendra (Nepal)  | June 1, 2001  | 9 (including himself) + 3 injured   |
| Serial murder     | Different (emotional cooling-off periods, varying from a few hours to years, between homicides) | Same/different        | Jack the Ripper (London, UK)   | From August 31, 1888 (the date of first murder) to November 9, 1888 (the date of last murder) | 5 prostitutes according to most estimates. However, estimates differ, from 4 to 9 |
| Spree murder      | Same (no emotional cooling-off period)  | Different             | Howard Unruh of Camden, NJ, USA. Randomly fired his loaded German Luger while walking through his neighborhood | September 6, 1949   | 13 + 3 wounded  |

The time span could perhaps be several days. The victims of a spree serial killer do not share similarities, as they do with serial killers.

Two most important variables that differentiate the three major forms of multicides are the cooling-off period in between homicides (variable 1) and location (variable 2) (Table 1).

The presence of an emotional cooling-off period between two consecutive killings in serial murders is an important variable. It is during this period that the killer has the opportunity to control his behavior and stop the act of murder. His failure to do so makes the serial killer a much more dangerous criminal. The absence of a cooling-off period in mass and spree murder precludes the possibility of the killer controlling his behavior.

Another distinction between serial killers and mass murderers is that, while a serial killer painstakingly tries to conceal his crime, a mass murderer has little interest in doing so and indeed may kill himself after the crime. It has been suggested that mass murderers are often suffering from a mental illness that may be associated with childhood trauma and sexual and/or physical abuse. In contrast, serial killers may show little evidence of mental disturbance, and outwardly they appear quite normal, despite the horrendous crimes they have committed. Table 2 lists important differences between serial and mass murderers.

**Multicide**

Mass murder, serial murder, and spree murder (also double and triple homicides, if they are counted as

separate categories) are species of the larger family “multicide,” which means multiple killings.

**Classification of Mass Murderers**

A number of classifications of mass murders exist. Here are some of them.

**Classification by Douglas et al.**

Douglas and coworkers classify mass murderers into two broad types: (1) classic mass murderers; and (2) family mass murderers.

**Classic mass murderers** Typically a classic mass murderer is a single person, operating in one location at one period of time. He is a mentally disordered individual, whose problems have increased to such an extent that he acts out against groups of people who are unrelated to him or his problems. He unleashes his hostility through shootings and stabbings. George Hennard is a typical example. Hennard smashed a pickup truck through a restaurant window in Killeen, TX, USA on October 16, 1991 and fired on the lunchtime crowd with a high-powered pistol, killing 23 people.

**Family mass murderers** A family mass murderer kills four or more family members in a single incident. Family mass murderers are further subdivided into two subtypes: (1) those who commit suicide afterwards; and (2) those who do not. Crown Prince Dipendra of Nepal (Table 1) represents the former and John List the latter. On June 1, 2001, 29-year-old

**Table 2** Important differences between a serial and mass murderer

| <i>Trait</i>                                  | <i>Serial murderer</i>   | <i>Mass murderer</i>  |
|---|--|---|
| Personality                                   | Psychotic individual, who kills for pleasure. Some have termed this "mental orgasm"  | A deranged individual who explodes suddenly and unpredictably due to extreme stress                         |
| Emotional cooling-off period between killings | Present  | Not present. All killings take place at the same time   |
| Planning/premeditation                        | Plans his murders carefully  | No planning. Acts on impulses   |
| Pursuit of publicity                          | Quite often a motive   | Rarely a motive   |
| Patterns                                      | Displays very well-defined patterns and rituals which he uses in each killing        | Shows no patterns or ritual to his killing  |
| Selection of victims                          | Selects his victims carefully  | Usually no selection of victims. Kills at random  |
| Location                                      | Crime is committed at secret places, in isolation                                    | Usually in public places, in full view of everyone  |
| Use of multiple weapons                       | Takes one or two weapons to the crime scene  | Takes many weapons and an enormous amount of ammunition (even provisions, in some cases) to the crime scene |
| Concealment of crime                          | Tries to conceal crime. Does not want to be apprehended. Tries not to leave evidence | No attempt at concealment. Not worried about leaving evidence   |
| Suicide committed after crime                 | No   | Quite often   |
| Motive for killing                            | Mentally disturbed   | May be mentally disturbed, but often revenge motives prevail  |

Crown Prince Dipendra killed eight members of his family and injured three, before killing himself. On November 9, 1971, 46-year-old John List shot his 85-year-old mother, his 45-year-old wife, 16-year-old daughter, and two sons aged 15 and 13, and absconded. He was apprehended by the FBI in 1989.

### **Classification by Dietz**

Park Elliott Dietz first classified mass murderers into three subcategories: (1) family annihilators; (2) pseudocommandos; and (3) set-and-run killers. In 1992, Holmes and Holmes offered two further categories: (1) disciples; and (2) disgruntled employees.

**Family annihilators** These are generally chronic alcoholic middle-aged males who kill their wife, children, pets, parents, and in-laws, often without warning. They are usually depressed, paranoid, intoxicated, or a combination of these. The family annihilator usually commits suicide after the killings, or may force the police to kill him, the so-called suicide by cop. A typical example is the murders carried out by Nepal's Crown Prince Dipendra.

**Pseudocommandos** These are young men obsessed with firearms, who start shooting indiscriminately in crowded places. They fancy themselves as military types, and frequently plan their offense with some detail. Their rampage usually ends in suicide. A typical example is 41-year-old James Oliver

Huberty who, on July 18, 1984, killed 21 people and injured 19 at a McDonald's restaurant in San Ysidro, CA, USA.

**Set-and-run killers** These killers set up the stage, so to say, and then quit. Arsonists, bombers, and poisoners who plan their attack sufficiently to make good their escape belong to this class. The unknown Tylenol poisoner may be classified in this subcategory, but would perhaps be better classified under the category of mass poisoner. Steven Benson of Florida, already mentioned, who killed his mother and adopted brother with a car bomb on July 9, 1985, would be classified in this category.

**Disciples** These are people who are unduly influenced to kill by a charismatic leader.

**Disgruntled employees** These are the employees who retaliate for what they feel was bad treatment by their employer. Thirty-three-year-old Paul Calden was an employee of Fireman's Fund Insurance Company in Tampa, FL, from where he was fired. On January 27, 1993, about 9 months after he was fired, he carried a gun into the cafeteria of that company and opened fire, saying, "This is what you get for firing me." He killed three coworkers and seriously injured two others. After the rampage, Calden killed himself. He represents a typical example of this group.

This classification makes use of several bases, mixing together motivation, the specific relationship between the victim and the offender, and technique for killing. This leaves a system that is neither mutually exclusive nor exhaustive in describing cases of mass murder. While several offenders could fit into more than one category, there are a number of other offenders who would not fit into any of them.

#### **Classification by Levin and Fox**

Levin and Fox classify mass murderers using just one base – motivation. According to their model, all mass murderers could be categorized as one or more of the following types.

**Motivated by vengeance** These are the individuals who think they have been wronged and they want to “pay back in the same coin.” Several mass murderers, like James Oliver Huberty and Dion Terres, have been heard saying before killings, “Now it’s payback time.” This theme was also seen in the 1993 destructive action of Gian Luigi Ferri, the 55-year-old business man whose murders in a San Francisco law office were apparently due to his nursed resentments about failed business schemes and anger at the legal system.

These revenge-based homicides have three subtypes:

1. individual-specific, where the offender targets particular people
2. category-specific, where particular groups of people are targeted
3. nonspecific, where the murders are precipitated by the offender’s paranoia, and where the offender does not have specific targets.

**Motivated by a warped sense of love** Rarely, a mass murderer can be motivated by a warped sense of love, such as the murders committed by John List, who was a respected accountant and known to be a very religious man. He felt, for no sound reason, that “he could not keep his family happy, so they had to go.”

**Motivated by profit** These are felony murders, which are purely for monetary gain, such as murders committed during a bank robbery.

**Motivated by political considerations** Suicide bombers would come under this category. But since these killings carry a political statement, most experts would include them separately under acts of terrorism, rather than as mass murders. Thus, cases like the US World Trade Center attack or the Akshardham temple killings in India, where 28 innocent people

praying in a temple were indiscriminately gunned down on September 24, 2002, are clearly cases of terrorism.

#### **Classification by Kelleher**

Kelleher identified seven categories of mass murder, all motivated by different factors:

1. Revenge: this is essentially the same as that found in Levin and Fox’s classification.
2. Perverted love: again, this is similar to Levin and Fox’s “warped sense of love” category, involving the killing of family or loved ones.
3. Politics and hate: this category is ideologically motivated, and usually involves acts of terrorism.
4. Sexual homicide: this theme is most often seen in serial murders and rarely in mass murders.
5. Mass executions: this involves the contract murder of several people in a single incident.
6. The insane: these have no motivation other than mental illness.
7. Motiveless: no motivation can be found in these cases.

#### **Classification by Petee et al.**

Petee and coworkers in 1997 provided one of the most comprehensive classifications of mass murderers to date. Instead of taking just one criterion for classification, they took two: offender motivation and target selection. Based on these two selection criteria, they came up with nine categories. They are careful to provide at least one convincing example from each category.

**Anger/revenge – specific person(s) target** In this category, the offender is angry and wants to “get even” with the persons who “wronged” him. He has in his mind specific persons as targets. He does not shoot at random. The case which best fits this category is that of 28-year-old student Gang Lu, who, on November 1, 1991 killed five people in Iowa City, IA, because he was not nominated for a prestigious award for his doctoral dissertation. He thought he had been wronged by his professors, so he shot down three of them, including the departmental chairman. He also killed a university administrator, as well as a Chinese fellow-student Linhua Shan, who had been nominated for the award Lu coveted.

**Anger/revenge – specific place target** In this category, the motivation remains the same as in the above category, i.e., anger and revenge, but the target is a specific place instead of specific persons. The place is usually where the killer was “wronged.”

The case of 33-year-old Edwin James Grace best illustrates this category. An employment agency had been unable to secure a job for him. On June 21, 1972 he reached the place where the agency was located (Cherry Hill, NJ, USA) and started shooting indiscriminately. Six people were killed and six were injured. It is important to note that Grace targeted the location, not specific people. In fact, he killed people who were not associated with the employment agency.

**Anger/revenge – diffuse target** Here again the motivation remains the same, but the target is diffuse. This group can be subdivided into two further categories: (1) cases where specific groups or categories of people are targeted; and (2) cases where people are just shot at random.

*Cases where specific groups or categories of people are targeted* In this subcategory, the killer vents his anger on a specific group of persons, such as members of a particular race. The target is diffuse in the sense that no particular person is aimed at. Instead, the target is a particular group or community. The case exemplifying this category is that of 35-year-old Colin Ferguson, who killed six passengers (and wounded an additional 19) on a Long Island commuter train on December 7, 1993. He was consumed by a hatred of white people. On December 6, 1989, 25-year-old Marc Lépine killed 14 women at École Polytechnic, Montreal, Canada, because he hated feminists. George Hennard also disliked females and most of his targets were females. In 1989, Patrick Purdy shot and killed five people because he hated Asians. Roland James Smith was moved by feelings of antisemitism. Baruch Goldstein disliked Arabs and killed 29 in 1994. James Oliver Huberty disliked Hispanics and targeted individuals of that group.

*Cases where people are just shot at random* In this subcategory, the killer aims at his victims at random. Neither specific persons nor specific groups are targeted. The target is truly “diffuse.” The case of Dion Terres, who killed at random at a McDonald’s restaurant, best typifies this subcategory.

**Domestic/romantic** This category is mainly based on the criteria of target selection. It can also be subdivided into two further subcategories:

1. Domestic type: the killer targets members of his own family for various reasons. The case of John List best typifies this subcategory.
2. Romantic type: the killer may have been spurned in a love affair. Richard Wade Farley had been

rejected by his colleague Laura Black. So he shot seven employees of the defense firm where Black worked, including her.

**Direct interpersonal conflict** This category seems similar to category 1 above, except that the anger is more immediate in this category. In the first category, described above, the feelings of anger may have been simmering for a long time, and finally find expression at some unpredictable time. In mass murders involving direct interpersonal conflict, the feelings of anger are generated “on the spot.” The case of Ray Ojeda best typifies this category. He killed three persons in San Antonio, TX, in 1991. Ojeda had been involved in a minor traffic accident. He began to argue with the driver of the other vehicle. As the argument escalated, Ojeda went back to his car, pulled out a gun, and shot the other driver. When two bystanders tried to intervene, Ojeda killed them as well.

**Felony-related mass murder** Here murders are committed during the commission of another felony, usually robbery. The killer may feel that the situation is getting out of hand, and may resort to mass murder. There may also be a need to eliminate witnesses.

The case of Robert Melson and Cuhuatemoc Peraita best typifies this category. In 1994, they robbed a Popeye’s Chicken restaurant in Gadsden, AL. After gathering up all the money, they herded the employees into a walk-in freezer and shot them all, killing three and seriously wounding one. This case is also representative of multiple offenders involved in mass murders. It is estimated that more than half of felony-related mass murders involve an accomplice.

**Gang-motivated mass murder** This category includes murders during gang confrontations. Usually there are multiple offenders. The dispute between two Vietnamese gangs in New York in 1990 is characteristic of this type of offense. After an argument in a Manhattan bar, David Tai, Tommy Tam, Peter Wang, and Ywai Yip followed the members of a rival gang into a parking lot, shooting and killing all three execution-style. The infamous Valentine day massacre, which occurred on the morning of February 14, 1929 in Chicago, IL, also belongs to this type. Seven people (five belonging to the rival Bugs Moran gang) were mowed down by Al Capone’s killers.

**Politically motivated mass murder** This category involves acts of terrorism. The motivation is primarily ideological, usually for some political cause.

Other causes may include religious intolerance, or a campaign for political change. Since these acts carry a political or a religious message, they are best classified as acts of terrorism.

Although Petee *et al.* do not suggest a further subdivision of this category, it can be divided into two further subcategories: (1) when the perpetrators are not present at the scene; and (2) when the perpetrators are present at the scene.

*The perpetrators are not present at the scene* In this category the offender is typically absent from the scene of the crime when the victims are killed. This category thus corresponds to the “set-and-run” category suggested by Dietz. The bombing of the Alfred P. Murrah Federal Building in Oklahoma City, OK, on April 19, 1995 by Timothy McVeigh and of the World Trade Center in New York on February 23, 1993 serve as examples of this form of mass murder.

*The perpetrators are present at the scene* In the early morning of May 14, 2002, three persons aged 19–20 years boarded a Himachal Tourism bus at Vijaypur, India. They were dressed in combat uniforms and looked like army personnel. The bus was going from Pathankot to Jammu. At 06.15 a.m. the perpetrators stopped the bus near Kaluchak, shot the driver and the conductor of the bus, and opened fire indiscriminately on the passengers in the bus. They also opened fire on a number of army personnel and their families in the vicinity. By 10.00 a.m., when all three had been killed by army personnel, they had killed 31 people and wounded another 47. The suspected political message that they carried was the liberation of Kashmir.

**Nonspecific motive** Petee *et al.* like to call this category the “residual” category. Here the offender’s motivation is not clear. He may be psychologically deranged. As an example they cite the 1988 case of Clem Henderson that occurred in Chicago, IL. Henderson murdered four people in a space of less than 20 min.

### **Amok and Mass Murder**

Amok is a culture-bound syndrome (CBS) strongly associated with mass murder. Though initially reported from Malaysia in the sixteenth century by European travelers, it is seen, with somewhat lesser frequency, all over the world. A CBS may be defined as a constellation of symptoms, which may have little medical basis, but which are strongly influenced by a

society’s social codes and mores and its cultural values. It is more or less a “learned behavior,” which may be expressed subconsciously. Violent self-sacrificial behavior, coupled with an initial fanatical charge, indiscriminate slaughter, and a refusal to surrender, is often taught as part of the cultural training of Malays and Javanese. A common tactic among Malay warriors was to charge forward brandishing their daggers shouting, “Amok! Amok!” This was supposed to increase their courage, while at the same time terrifying the opponent. Young warriors were socially and culturally encouraged to emulate this behavior, often as an instrument of social protest, if a ruler became a tyrant and abused his power. This behavior was also useful as an act of religious fanaticism, whereby it became necessary to slay all “infidels” indiscriminately. Since this behavior had a strong social value, it was often condoned – even encouraged – by the society.

Gradually amok lost its social value, and became more personal in nature. If, for example, a person’s ego was bruised by an insult, he would often take recourse to this behavior. Most often, however, the behavior appeared motiveless. Typically, the assailant, known as a pengamok, would brood for several days. Then suddenly, without any warning, he would leap up with his dagger in his hand, and kill everyone within reach. Dozens of people might be killed during an attack. The attack would last several hours until the pengamok was either overpowered or killed. If he managed to survive, he would pass into deep sleep or stupor for several days, followed by total amnesia of the event.

Generally four components of amok are recognized:

1. a variable period of prodromal depression, often running into days
2. a sudden and unpredictable homicidal drive, lasting for several hours
3. absence of personal motive
4. a subsequent amnesia of the event.

Psychiatrists are divided over whether the act is conscious or a manifestation of automatism. That the behavior might be a conscious act, rather than an act of automatism, becomes evident when we note that the number of cases dropped sharply after the UK took over the administration of Malaya, and it was ordered that all amok cases be captured alive and brought to the court.

A number of social, cultural, personal, and medical causes of amok have been described in the literature. **Table 3** summarizes some of the major causes of amok. A combination of two or more causes may be present in a particular case.

**Table 3** Major causes of amok resulting in mass murder

| Category | Cause  |
|----------|--|
| Social   | (1) An instrument of social protest by subjects, when their ruler became a tyrant or abused his power<br>(2) As an act of religious fanaticism, whereby it became necessary to kill all infidels |
| Cultural | (1) Cultural training for warfare, a war tactic, a concept of courage<br>(2) Emulation of epic heroes who behaved in this way  |
| Personal | (1) Escaping from distress, a tension-reducing device<br>(2) Fragile ego coupled with threatened self-esteem   |
| Medical  | (1) Psychiatric disorders (e.g., schizophrenia)<br>(2) Febrile delirium<br>(3) Tuberculosis<br>(4) Syphilis<br>(5) Epilepsy<br>(6) Consumption of psychoactive drugs such as cannabis or opium   |

### Profile and Characteristics of a Mass Murderer

A study of mass murderers in the USA and Canada during the past 50 years suggests that such individuals are usually single or divorced males in their 40s with various axis I paranoid and/or depressive conditions and axis II personality traits and disorders, usually clusters A and B. The episode of mass murder is precipitated by a major loss related to employment or a relationship. A warrior mentality suffuses the planning and attack behavior of the subject. If the perpetrator is psychotic at the time of the offense, greater deaths and higher casualty rates are significantly more likely. Only 20% of all mass murderers directly threatened their victims before the offense. Alcoholism and the use of pornography are usually associated with a mass murderer. Death by suicide or at the hands of others is the usual outcome for the mass murderer.

A number of situations seem to motivate a mass murderer to act, and such situations are called "high-risk situations." Some are continuous unemployment (especially men), the loss of a job, loss of self-esteem as a breadwinner, guilty feelings for not being a good provider, and hatred because of presumed wrongs by other people. These people may be the employer, spouse, figure of authority, the police, or even the "system." Sometimes, a mass murderer is moved by feelings of racial rejection.

In several cases, the mass murderer initially may have only one target in mind, for example, an ex-wife, a former boss, or a friend. But once the killer enters the place where his intended victim is, he may start indiscriminate shooting to kill everyone in the neighborhood.

Mass murderers tend to have violent changes of temperament. They may be meek at one moment and livid the next. This may happen because the perpetrator has feelings of inadequacy or feels he is being duped by society.

An important characteristic of a mass murderer is that he displays "predatory aggression" rather than "affective aggression." Affective aggression is a rather normal form of aggression, which is aimed to reduce threat. It is a defensive mode of violence, which is accompanied by high levels of sympathetic arousal and emotion such as anger, and is a time-limited reaction to an imminent threat. In contrast, predatory violence is an attack mode of violence. It is planned and emotionless and is accompanied by minimum autonomic arousal. The person engaging in predatory violence (the mass murderer) often appears very calm and confident, with no signs of nervousness. While a person displaying affective aggression does so in response to a perceived threat, there is no immediate perceived threat in predatory aggression.

### Future Trends

Despite the work that has been done to date, research on mass murder is clearly in its infancy. One major reason for this is the very small sample size that is available for research. Just about 100 mass murderers are known to date. This has perhaps dissuaded most clinicians, sociologists, criminologists, and forensic psychiatrists from taking up this subject for further research. But clearly this subject is teeming with endless research possibilities. There are many areas that need further exploration. One is the pathophysiology of the limbic system in such individuals. The limbic system comprises the cingulum, hippocampus, thalamic and hypothalamic nuclei as well as the basal ganglia, midbrain, and the amygdala. It is this area that is associated with uncontrolled rage, such as is displayed by mass murderers just before their acts. How does the physiology of the limbic system in mass murderers differ from that of normal individuals? Which factors trigger it and how? Or is it different at all?

Another area of research could be the possible effects of heredity and environment. There are many studies indicating that genetic makeup as well as environmental factors may influence violent conduct in a person. Some studies seem to indicate that there is a distinctly increased tendency towards violence in individuals having the XYY chromosomal configuration. Is it possible to find some commonality in the genetic makeup and environmental influences of mass murderers? If it is, interventional steps may be taken to reduce this phenomenon.

Selective serotonin reuptake inhibitors (SSRI) are known to inhibit the predatory aggression that is

often seen in mass murderers. When a potential future mass murderer is isolated, a pharmacological treatment with SSRIs may be considered. This is another area where more research is needed.

### See Also

**Mass Poisonings; Murder–Suicide; Serial Murder; Terrorism:** Medico-legal Aspects

### Further Reading

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