Serial Murderers in Germany From 1945 to 1995

A Descriptive Study

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The total number of serial murderers who were convicted between 1945 and 1995 in the Federal Republic of Germany (N = 61) are described in terms of their characteristics, with reference to sociodemographics, family background, social integration, intellectual capability, and personality disorders. A comparison with a larger sample of German single murderers from a previous study shows that the serial perpetrators appear to constitute a particular class of homicide offenders. In particular, the serial murderers have a higher likelihood of personality disorder, cerebral anomalies, and offense premeditation and are more likely to have had no relationship with the victim prior to the offense. With respect to differentiation among serial murderers, differences become apparent between serial murderers whose offenses have a strong sexual component (n = 22) and the remainder of the sample. Finally, the limited capacity of modus operandi and signature for linking cases in ongoing investigations is discussed.

In 1950, the German forensic expert Barnstorf wrote about the *serienmörder* (serial murderer) Rudolf Pleil. In addition, Ernst Gennat, then chief of the homicide department in the police headquarters of Berlin, used the term as early as 1930 with reference to the "Düsseldorf Ripper," Peter Kürten (Gennat, 1930). However, despite the term *serial murderer* being used for a long time, its exact meaning is not completely clear, especially for purposes of research.

Terminological Issues in Studying Serial Murder

Regarding definitions of the terms serial murderer or serial murder, many authors have striven for terminological clarity and parsimony, unfortunately, without great success (Egger, 1990; Greswell & Hollin, 1994; Hickey, 1997; Jenkins, 1988; Keeney & Heide, 1995; Kelleher & Kelleher, 1998). On the contrary, there is a lively controversy as to which are the defining criteria of a serial murderer. It is unclear, for example, how many killings constitute a series. The spectrum of opinions ranges from including all those who have "[committed] a second murder and/or subsequent murder" (Egger, 1984, p. 348) to denoting only "those who kill others in 10 or more separate incidents" (P. Dietz, 1986, p. 483; see also M. Dietz, 1996; Jenkins, 1989; O'Reilly-Fleming, 1992; Prentky et al., 1989; Stote & Standing, 1995).

In addition, the serial murderer is assumed to be "a single perpetrator" (Warren, Hazelwood, & Dietz, 1996, p. 79). However, occasionally, teams of murderers ("one or more individuals," Egger, 1984, p. 348) are subsumed under the definition as well (see also Geberth & Turco, 1997).

There is further dissent concerning the locations of the killings. In some definitions, the murders have to be "committed in a different geographic location" (Egger, 1984, p. 348; see also M. Dietz, 1996), whereas others demand that the murders occur "within the same area" (Leibman, 1989, p. 41).

Similarly, the time span that has to elapse between homicides is defined differently. Some argue for "more than hours" (Rappaport, 1988, p. 42), others insist that the period be "as minimal as two days" (Busch & Cavanaugh, 1986, p. 6; Geberth, 1986, p. 492) or the homicides occur "over a greater period of time than seventy-two hours" (Jenkins, 1994, p. 23). Other researchers have broadened the interval and defined serial murder "as a chain or sequence of killings spanning a few days, weeks, months, or years" (Hickey, 1986, p. 73) or simply as a series of homicides happening "over a period of time" (Holmes & DeBurger, 1985, p. 30; Skrapec, 1996, p. 158).

Another point of controversy is the motivational background for the crimes. On the one hand, they should happen "without rational motive" (Jenkins, 1989, p. 381) or be "seemingly motiveless" (Norris, 1989, p. 15; see also M. Dietz, 1996), whereas on the other hand, only sexually motivated killings are included (Brown,

1991; DeHart & Mahoney, 1994). A third option is that a case should be excluded if "the offender acted primarily out of political motives or in quest of financial profit" (Jenkins, 1994, p. 23; see also Giannangelo, 1996). There is, however, one area of agreement: that the time immediately after the offense is characterized by an emotional "cooling-off period" (DeHart & Mahoney, p. 30; Geberth, 1986, p. 492).

In some countries, the term serial murderer has found its way into the legal system. Within a special clause on the death penalty in the state of New York in the United States, for example, capital punishment may be applied to those who killed "three or more people within two years according to the same pattern or a preconceived plan" ("New York," 1999).

The most often cited definition of serial murder was contributed by Ressler and his colleagues (Ressler, Burgess, & Douglas, 1988) from the Federal Bureau of Investigation's (FBI) Behavioral Science Unit. They define serial murder as "three or more separate events with an emotional cooling-off period between homicides, each murder taking place at a different location" (p. 139).

This definition, however, opens up more questions than it answers. Which forms of homicide are meant by "events"? Would one attempted and two completed murders or three attempted murders be sufficient to qualify as a series of murders within this framework? Why would the murders have to be committed at different locations? How are such crimes to be separated temporally? Which kinds of homicidal incidents (i.e., alone vs. with an accomplice) are permissible within this definition? Can a mentally handicapped or disturbed perpetrator, who is incapable of comprehending his[1] guilt, be referred to as a serial murderer? Moreover, referring to an area of agreement among researchers, what exactly is meant by "emotional cooling-off"? How could such a state be verified? Hence, for all of its utility, one of the most commonly cited definitions of serial murder leaves much room for debate.

Due to these shortcomings, we have adopted a definition of the serial murderer that informs the present research: *The fully or partially culpable perpetrator commits alone or with accomplice(s) at least three completed murders, each of which have to be premeditated and characterized through a new, hostile intent*. This definition assumes that the perpetrator has to be at least partially culpable because a

severe mental disorder or disturbance would not render him accountable for his deeds. (By virtue of this criterion, one perpetrator suffering from a severe hallucinatory schizophrenic psychosis was excluded from the sample for the present study.) In addition, the crimes have to be committed either alone or with an accomplice or accomplices so that indirect perpetrators, instigators, and assistants can be differentiated. Apart from that, at least three murders should have been committed to fulfill the prerequisite of a series. *Webster's Dictionary* defines the term *series* as "a group of usually three or more things or events standing or succeeding in order and having a like relationship to each other" (Gove et al., 1971, p. 2073).

A further characteristic of this definition is that the necessary differentiation into separate crimes is not achieved through a temporal component but with respect to the specific intent. In this way, serial murderers can be distinguished from so-called mass or spree killers. Of particular importance in this regard is the assertion that the series of murders consists of at least three homicides that can be judged as intentional or premeditated. Hence, not only those individuals who fulfill the (more severely punishable) criteria for first-degree murder can be deemed serial murderers but also those that commit acts of intentional manslaughter. This allows the exclusion of cases of serial homicide where the death of the victim was caused accidentally or through negligence, for example, in conjunction with robbery or rape. Furthermore, this definition seems indispensable to distinguish other forms of intentional homicide, such as serial killing of patients on their request that are not compatible with the criterion of hostility.

The Scope of the Problem

Prevalence

The inspection of various German print media over the last 5 years reveals reports of approximately 212 serial murderers that have presumably killed more than 2,400 victims worldwide. According to estimates published in the literature, the prevalence of serial murder has (arguably) increased considerably in the United States as well as in Eastern European states in the last decades (Gilbert, 1983; Godwin, 1978; Hewitt, 1988; Jenkins, 1991;

Lester, 1995; Stote & Standing, 1995; Zahn, 1980). It is, however, not feasible at present to make really reliable statements on the actual frequency of this type of violent crime. To date, there are only a few official statistics that explicitly address the category of serial homicide (Copeland, 1989; Geberth & Turco, 1997). The other estimates are difficult to compare due to incompatibilities in definition or terminology.

In the Federal Republic of Germany, 54 men and 7 women were convicted as serial murderers (i.e., fulfilling the criteria of the above definition) within the period from 1945 to 1995. According to our own research, apart from these, there are at least 21 series of homicides (79 individual offenses) that could not be solved. This was established by the first author through direct contact or correspondence with police officers or through analysis of investigation files. In these cases, the police treated the individual cases as being parts of a series but were unable to identify the perpetrator. This yields an estimated total of 82 serial murderers, to whom the police attributed a total of 453 homicides. An additional 12 suspects could be identified between January 1996 and April 2000 who are deemed responsible for at least 50 killings.

These figures, however, do not reflect the true magnitude of the phenomenon. Another 19 individuals were under strong suspicion of having killed three or more victims but could only be convicted for two homicides. Moreover, one should not overlook a further 89 perpetrators who were convicted of double sexual or robbery-related homicides. The individuals in this group can be seen as potential or prevented serial murderers due to their personality structure and motivation and their pattern of victim selection. Furthermore, they demonstrated a high risk of reoffending.

Clearance and Conviction Rates

If the prevalence rates of serial homicide in Germany are compared over time, it becomes evident that they show a continuous increase since 1965. From 1986 to 1995 alone, our data indicate that there were 62.7% more serial murders than in the previous decade. From the total of 1,855 sexual and robbery-type homicides that the figures published annually by the German Federal Police Bureau (Bundeskriminalamt, 1953) denote for this period,

serial perpetrators have committed an estimated 8.4% of these crimes.

According to our research, the overall clearance rate for serial homicides between 1945 and 1995 is 82.6%. This figure is slightly below the comparison figures for homicides in general. Between 1986 and 1995, for instance, a suspect could be identified in 91% of all registered homicide cases (Bundeskriminalamt, 1999).

For 68.4% of the serial murderers, an arrest could only be made because of tips from the public, pure chance, or the offender turning himself in. A further limit is put on the police's success by the modest rate of convictions: 63.7%. As far as sexual murders are concerned, only 56.4% of such crimes led to a conviction. Summing up, it appears that every fifth serial murder offense remains unsolved, whereas every third offense remains unpunished.

The Present Research

The surprising prevalence of serial murder in Germany over the last 55 years, combined with the limited success in apprehending and convicting the perpetrators, coincides with a lack of knowledge about the phenomenon. No empirical study of German serial murderers had been conducted previously, nor were there any monographs published on the topic in the last 50 years in Germany. To help to remedy this lack of knowledge, the first author started in early 1995 to develop an outline for a study that would further the understanding of serial murder with respect to the following: The primary research questions pursued were "What are the characteristics of serial murderers?" and "Can these individuals be differentiated offenders who committed single or double homicides?"

METHOD

Sample

As a time period, the years from 1945 (the end of World War II) until end of 1995 were chosen. The sample of participants are all serial murderers who have been convicted within this period in

Germany. Excluded are those from the territory of the former German Democratic Republic—the eastern part of Germany—prior to the reunification in 1990. The prosecution files and the court verdicts, including psychiatric and psychological reports, were used as the primary data sources for the study. Additionally, data were collected from police files about all cases of presumable serial homicide where either no suspect could be identified or the evidence did not suffice to prosecute.

To this end, the complete issues of the *Federal Criminal Investigation Update*, which is a daily publication issued for the police forces by the German Federal Police Bureau, the *Bundeskriminalamt*, were analyzed. Apart from that, the criminological and criminalistic literature and printed media were examined. Any instances of serial homicide reported in the latter sources were verified through personal communication with the police forces that had been responsible for the investigation of the respective series.

Additionally, standardized interviews were carried out with 8 participants, whereas another 10 participants engaged in correspondence through letters with the first author, some of them over several years. Because there are some severe discrepancies between the self-reports of these participants and the factual statements of the law courts, the self-reports were not included in the descriptive part of the study.

These procedures yielded information for a total of 61 individuals. These persons represent the whole population of individuals convicted for three or more homicides in the Federal Republic of Germany between 1945 and 1995 who conform to the definition of serial murder discussed above.

Procedure

The analysis of the prosecution files was approached in three steps. First, 232 variables were identified. They represent the total of relevant and applicable criminological, criminalistic, psychological, psychiatric, sociological, and medical issues that have been defined in accordance with accepted judicial, clinical, and diagnostic standards. This information includes, as examples, age at the time of the offenses, socioeconomic and family background, education level, employment, previous convictions, IQ score,

diagnosis of mental or personality disorder, victim-offender relationship, and crime-scene activities.

Then, the data were collected and scored in a standardized manner for every individual. This means that the presence and form of these variables was coded for each of the 61 individuals. Finally, descriptive and inferential statistical analyses were conducted.

RESULTS

As mentioned above, the final sample consists of 54 male and 7 female individuals. An overview of characteristics of these serial murderers is shown in Table 1. Notably, the average number of homicides for which each has been convicted is 5.1 (SD = 2.9), ranging from a minimum of 3 to a maximum of 16. The mode is 3 homicides, with 41% of the individuals falling into this category. As might be expected, this distribution shows a pronounced positive skewness (skewness statistic = 1.92), that is, the corresponding frequency curve has a long right tail.

It was tested whether the distribution of IQ scores in the sample approximates a normal distribution. The goodness-of-fit test indicates that the observed IQ scores are not consistent with a normal distribution ($\chi^2_{(1)}$ = 4.57, p < .05). This is primarily due to a greater number of individuals in the IQ range of 100 to 110 (n = 24) than would be expected if the scores were normally distributed (the expected frequency would be n = 16.64 for this category). Hence, a serial murderer from the sample is slightly more likely to be of above average intelligence than someone who is randomly picked from the general population. Surprisingly, the less intellectually capable offenders were able to evade apprehension twice as long as those individuals with an IQ greater than 100. The average values are 8 years, 3 months for those with lower IQ scores compared to 4 years, 2 months for those with higher IQs.

Although most of the individuals are endowed with sufficient intellectual capability, the majority failed at school and in employment. Nearly two thirds (63.8%) had a bad school record, 43.1% had to repeat a class at least once, and 39.7% left school prematurely. Only 51.7% of the individuals have completed job training, but none of them achieved a senior employment position.

TABLE 1
Frequencies of Characteristics for Serial Murderers in Germany, 1945-1995

Characteristics	n	%
German citizenship	61	91.8
Male	61	88.5
Intellectual capabilities (IQ)[a]	56	
Very good (IQ: = 120)		5.4
Good (IQ: 110-119.9)		8.9
Above average (IQ: 100-109.9)		42.9
Below average (IQ: 90-99.9)		25.0
Low (IQ: 80-89.9)		10.7
Slight debility (IQ: 70-79.9)		7.1
Peculiarities in upbringing	55	
Disturbed parent-child relations		80.0
Physical abuse in family		47.3
Alcohol abuse by parent or parents		45.5
Foster parents or foster home		36.4
Divorce of parents		34.5
Criminal activity of parent, parents, or siblings		29.1
Schooling	58	
Institution for pupils with learning disability		18.9
Gymnasium (grammar school)		12.1
Hauptschule (basic level high school)		55.2
Realschule (high school)		13.8
Employment at time of offense	59	
Unemployed		39.3
Manual laborer		34.4
Employee		11.9
Civil servant/freelance		6.8
Senior job position		0.0
Social alienation	58	
Lack of social integration		85.1
Objective outsider position		62.1
Subjective outsider position		37.9
Offender had criminal record	58	79.3

a. $M = 99.8$; $SD = 11.6$; Range: 72-128.

Dysfunctional development in primary socialization processes could be observed for 89.1% of the sample. This is likely to have increased the risk for social maladjustment. Later psychological and behavioral anomalies were facilitated by the misconduct of incompetent parents. In 32.7% of cases, there was a general conflict between parents and child; in 27.3%, there was a severe conflict between father and child; and 20% of the individuals had a disturbed relationship with their mother.

About two thirds (65.5%) of the individuals came from families with low economic status. On average, the individuals had more than three siblings. Although many of the individuals were subject to physical and psychological maltreatment by parents or siblings, only 3 individuals (5.2%) reported sexual abuse. Salient aspects in the social behavior of these individuals, according to the clinicians (psychiatrists and psychologists) who assessed them for court proceedings, are the lack of orientation, a deficiency in forming and maintaining attachments or bonds to others, a lack of social impact, deficits in conflict competency, and a passive, at times hostile, basic emotional state paired with a lack of empathy. Of course, these clinical opinions result from post hoc assessments. Hence, it is not clear whether they are—at least in part—the causal factors or the outcome of committing serial homicide. We do believe, however, that the aforementioned aspects of social alienation and maladjustment are likely to represent some of the precursors to serial homicide to some degree because some of the aspects, such as deficits in forming and maintaining attachments to others, date back to the early childhood and adolescence of the individuals in the study. Similarly, the experience of low economic status and the frustration of the need for social recognition have been discussed in the literature as important factors that contribute to extreme aggression (Leyton, 1986).

The average age at the time of commission of their first homicide is 27.5 years, (SD = 8.19) with a minimum of 14 and a maximum of 53 years. The distribution is positively skewed (skewness statistic = 1.02), that is, it has a long right tail. This means that the majority of the individuals are found in the lower end of the age range: three quarters (74.6%) of the individuals were 30 years old or younger at the time of their first homicide.

Psychological, psychiatric, or both types of assessments of the individuals were analyzed to obtain an indication of the degree of personality disorders and clinical symptoms in the sample. These assessments represent expert opinions that were given during the trial proceedings or subsequently in treatment by mental health professionals, mainly forensic psychiatrists and forensic psychologists. Such reports were available for 52 individuals in the sample. These findings are summarized in Table 2 according to the

TABLE 2
Frequency of Diagnosis for Personality Disorders (n = 52)

ICD-10 Diagnostic Category	% Frequency
Dissocial (F = 60.2)	28.8
Mixed personality disorders (F = 61.0)	17.3
Emotionally unstable (F = 60.3)	13.5
Schizoid (F = 60.1)	9.6
Anxious: avoidant (F = 60.6)	7.7
Narcissistic (F = 60.8)	5.8
Paranoid (F = 60.0)	3.8
Histrionic (F = 60.4)	1.9
None	11.5

NOTE: F values refer to the classification system of mental disorders within the ICD-10 (World Health Organization, 1992).

international standard for diagnosing mental disorder issued by the World Health Organization (1992), the ICD-10.

For 46 participants (88.5%), personality and conduct disorders had been diagnosed. In the remaining 6 cases, there were merely signs for elevations on particular scales, which did not warrant a psychiatric diagnosis. The clinical dimensions that showed the highest frequencies in the sample were emotional instability, low affect, lack of responsibility, egotistic or egocentric tendencies, low frustration tolerance, reduced impulse control, and low self-confidence.

Moreover, the high degree of suicidal tendency deserves attention. Five individuals committed suicide, only 1 of these while in custody, and an additional 15 individuals (27.3%) made suicide attempts prior to their apprehension. In addition, 12 individuals (19.7%) reported that they had considered committing suicide prior to their apprehension.

Are Serial Murderers Unique?

The discussion so far has attempted to differentiate among serial murderers. Through a comparison with offenders who were convicted of single murder or manslaughter, we also tried to establish whether the serial perpetrators represent a distinct class of homicide offenders. For this reason, the present sample was

TABLE 3
Comparison of Characteristics for Single and Serial Murderers

Comparison Item	Single (n = 750) % Frequency	Serial (n = 52-61) % Frequency	χ^2
Personality disorders	18	89	47.11*
Offense(s) committed in affect	53	4	42.12*
No relationship with victim prior to offense(s)	21	80	34.47*
Sexual motive	3	41	32.83*
Avarice as motive	11	36	13.30*
Cerebral anomalies	10	33	12.30*
Suicide attempt prior to apprehension	9	27	9.00*
Offense(s) are direct consequence of conflict	15	3	8.00*
Previous convictions	51	79	6.03
Intoxicated during offense	49	28	5.73
Manual labor	52	34	3.77
Female victim	47	66	3.19
Unemployed	26	39	2.60
Dysfunctional family background	70	89	2.27
Single or divorced	65	74	0.58
Male	90	89	0.50
Limited culpability	54	51	0.09

NOTE: The chi-square tests assess the sameness of the distribution between the single-homicide offenders in the study by Rode and Scheld (1986) and the serial homicide offenders in the present study.
*$p < .05$, according to the Bonferroni-type multiple testing adjustment developed by Holm (1979).

compared with the findings from a study that analyzed the prosecution files of 750 nonserial offenders (Rode & Scheld, 1986).

The results of the comparison are shown in Table 3. Chi-square tests are calculated for the comparisons of the 17 criteria in this table, based on the percentages of occurrence in the sample of Rode and Scheld (1986) and the present sample. The 17 criteria are used because they represent the common denominator of the data reported by Rode and Scheld and the data from the present study. Because this is a test of the global hypothesis that serial murderers differ from their single-homicide counterparts by means of several inference tests, it runs the risk of Type I error inflation. Hence, the chosen significance level of $\alpha < .05$ is adjusted via the procedure described by Holm (1979), as presented in Holland and

Copenhaver (1988). This adjustment represents an improvement over the very strict Bonferroni correction.

In 8 of the 17 comparisons, the chi-square values are significant, that is, the observed differences are not commensurate with chance variation. Therefore, serial murderers appear to constitute a distinct type of homicide offender who shows greater signs of alienation, social maladjustment, and anomaly than single-homicide offenders. In particular, the serial murderers are more prone to personality disorders and are more likely to have sustained brain damage. Their crimes are more likely to serve selfish needs, such as obtaining sexual gratification or material gain. They generally do not know their victim prior to the offense, although the offense itself is likely to be premeditated. For the single-homicide offenders, in contrast, the offense is more likely to be the outcome of a momentary loss of control, either as a consequence of conflict or of strong affect.

On a descriptive level, the differences that do not reach statistical significance are also in the direction of serial murderers being more socially isolated or alienated individuals. They have higher rates of unemployment and previous convictions, are more likely to have a dysfunctional family background, and more often live alone. Finally, a one-sample t test of age at the time of the first offense for the 61 serial murderers ($M = 27.5$, $SD = 8.19$) against the average value of 31.5 years for the single-homicide offenders from the study by Rode and Scheld (1986) reveals that the serial murderers are significantly younger when committing their first offense ($t_{(58)} = -3.74$, $p < .001$).

The Sexual Murderer

When describing the characteristics of the serial murderers in the sample, special attention should be given to those individuals whose offenses display strong sexual connotation, because a substantial proportion of the literature on serial murder has put an emphasis on this type of offender (see Brown, 1991; DeHart & Mahoney, 1994; Egger, 1990; Giannangelo, 1996; Lunde, 1976). In fact, some authors have equated serial murderers with sex killers or lust murderers (Egger; Giannangelo; Lunde).

Within the sample, 22 individuals could be identified as sexual murderers because their behavior before, during, or after the offense displayed a strong sexual component. They were convicted of a total of 137 homicides. It is worthwhile to note that, in many of these cases, it was not the death of the victim, as such, that the offender experienced as sexually rewarding. Rather, the kind of sexual acts involved and their relative significance for the perpetrator can be highly individualistic. In many cases, they reflect the deviant sexual or violent fantasies (or combinations of both) of the perpetrator.

The sexual murderers appear to favor a manual way of killing their victims by strangulation with an instrument (28.3%), bludgeoning (23.2%), stabbing (22.5%), or manual strangulation (21%). In total, such a direct manual act of killing applies to 96.4% of the 22 homicides committed by sexual murderers. In contrast, individuals ($n = 129$) who killed their victims primarily for some immediate material gain, for example, in the context of a robbery, used a weapon in 54.1% of cases that did not require them to have direct physical contact with the victim.

A substantial age difference becomes apparent when the 22 sexual murderers in the sample are compared with the remaining individuals in the sample. The sexual murderers' average age at the time of the first offense was 22.5 years ($SD = 5.82$), whereas the corresponding value for the remainder of the sample is 30.9 years ($SD = 7.94$). Sexual murderers are significantly younger when they commit their first offense than are nonsexual serial murderers ($t_{(57)} = 4.27$, $p < .001$). There is, however, no significant difference between the two groups in terms of their IQ.

As far as the diagnosis of sexual disorders is concerned, no clear pattern emerged for the group of sexual murderers. As can be seen in Table 4, almost all forms of sexual deviance could be found. In most cases, the participants had more than one abnormal sexual preference or fixation. In this regard, the combination of sadism and fetishism constituted a salient pattern, although in some instances only tendencies could be diagnosed. In addition, a substantial number of individuals (77.3%) reported disturbed sexual relations. Moreover, individuals in this group were not able to make sexual contacts (35.3%) or to achieve sexual gratification according to their taste in a given relationship (64.7%).

TABLE 4
Frequency of Diagnosis for Disorders of Sexual
Preference for Serial Sexual Murderers (*n* = 22)

ICD-10 Diagnostic Category	% Frequency
Multiple disorders of sexual preference (F = 65.6)	40.9
Sadism (F = 65.5)	36.4
Fetishism (F = 65.0)	31.8
Pedophilia (F = 65.4)	273
Necrophilia (F = 65.8)	182
Exhibitionism (F = 65.2)	18.2
Voyeurism (F = 65.3)	13.6
Sodomy (F = 65.8)	9.1
Coprophilia (F = 65.9)	4.5

NOTE: F values refer to the classification system within the ICD-10 (World Health Organization, 1992).

Behavioral Consistency Versus Change

The most frequent way of killing the victim was through asphyxiation, with strangulation via an instrument occurring in 16.9%, manual strangulation (choking) in 15.6%, and suffocation in 0.9%. In the remaining cases, the victims were shot (23.8%), stabbed (14.6%), bludgeoned (14.1%), poisoned (13.5%), or drowned (0.9%).

Modus Operandi

The comparative analysis of patterns in offense behavior, that is, of intraindividual consistencies in modus operandi across series, opens up the possibility of prediction, either to link new offenses to extant series or to make inferences about the likely characteristics of a perpetrator. A consistent modus operandi should be defined as a correspondence in those crime-scene actions that are aspects of a rational, goal-oriented strategy on behalf of the perpetrator. These actions are an outcome of the offender's experience or conviction that particular instrumental (e.g., appropriate weapon) and strategic proceedings (e.g., time of day, location, choice of victim) are more likely to lead to success.

The majority of the offenders in the sample show marked differences in their actions from one homicide to the next. These dif-

ferences would have seriously impeded any attempt at linking those cases to a series. In particular, marked differences became apparent in the transition from the first to the second offense in a series. Across the sample, 59.1% of the individuals (72.7% of the sexual murderers) changed their modus operandi through the modification of one or more of the following parameters:

- Crime scene freely accessible versus crime scene hidden from view;
- Victim from own social background versus no offender-victim relationship prior to the offense;
- Assault-type attack versus use of manipulation to lure the victim to the crime scene;
- Control of victim through threats versus control through restraints;
- Weapon obtained at the crime scene or from the victim versus bringing own weapon to the crime scene;
- Single offender versus offending with accomplice or accomplices;
- Digital sexual manipulation versus attempted or completed rape;
- Attempted murder versus completed murder;
- Single homicide versus double or triple homicide;
- Leaving evidence at the crime scene versus removing evidence thoroughly;
- Fleeing from the crime scene versus retreat after prolonged stay at the crime scene;
- Leaving victim's belongings at the crime scene versus taking some of the victim's belongings;
- Victim's body openly displayed versus victim's body hidden or removed;
- Crime scene being the body recovery site versus crime scene not being the body recovery site;
- Crime scene remaining unchanged versus staging of the crime scene.

No confirmation was found for the hypothesis that sexual murderers in particular would target one special type of victim (Hickey, 1990; Jenkins, 1994; O'Reilly-Fleming, 1992). Only three individuals studied (13.6%) showed a fixation on a particular targeted victim (for example, slender girls with long, blond hair). Only preferences in terms of gender and age of the victims could be found.

About one fifth (18.2%) of the individuals killed victims of either gender, and 22.7% of the sample killed both children and

adults. Based on the aforementioned findings, it is plausible that modus operandi can be influenced through endogenous (e.g., learning) and exogenous (e.g., situational demands, victim resistance) factors. Any consistency is therefore likely to be temporary because the modus operandi is subject to gradual developments or sudden changes from one homicide to the next. The potential for linking cases merely based on the respective modus operandi involved appears to be limited.

Signature

The signature of the murderers, on the other hand, promises to be a more valuable criterion to capture the peculiarities of the perpetrator in terms of his personality and behavior. The term *signature* refers to unmistakable action sequences that appear to be of great relevance to the perpetrator but that have no clear strategic or rational function (Douglas, Burgess, Burgess, & Ressler, 1992; Keppel, 1995, 2000). The signature acts are primarily an outcome of a perpetrator's pathological or neurotic personality structure and are frequently of a ritualistic nature. In particular, they tend to reflect sexually deviant and violence-oriented fantasies on which the perpetrator is fixated (Hazelwood, Dietz, & Warren, 1992; MacCulloch, Snowden, Wood, & Mills, 1983).

If they occur, these signatures can be deemed highly consistent, as not a single one of the participants omitted his ritual if he remained undisturbed during the offense. This seems to be the case because only the realization of the fantasy would lead to sexual or inner gratification for the perpetrator. Within the scope of the study, the following crime-scene actions could be defined as signatures:

- Torture of the victims without the use of instruments or weapons;
- Vital mutilation of victims with a knife or other instrument;
- Offensive dismemberment;
- Postmortem sexual intercourse;
- Postmortem insertion of object or objects into vagina or anus;
- Urinating or defecating on victim's underwear or on underwear brought to the scene;
- Staging of victim with underwear brought to the scene;
- Binding and gagging the victim with pieces of victim's own clothes;

- Postmortem removal of organs or intestines;
- Postmortem cutting-off or removal of genitals;
- Repeatedly preventing the victim from dying when strangling to prolong the victim's suffering;
- Multiple stab wounds in the breast, genital area, or both;
- Postmortem squeezing of female victim's breasts without sexual intercourse;
- Cutting or tearing apart victim's clothing; and
- Taking away victim's underwear, jewelry, or both.

However, even if these particular crime-scene actions are easy to recognize, their presence does not guarantee criminalistic success in identifying specific offenders. As a case in point, only 22.7% of the individuals studied (but 40.9% of the sexual murderers) did in fact have such signatures that distinguished their crimes.

SUMMARY AND DISCUSSION

This article began by providing an operational definition of serial murder and then summarized empirical findings on the entirety of individuals from the Federal Republic of Germany from 1945 to 1995 whose crimes met the criteria of that definition. First, the individuals were described in terms of their characteristics and their sociodemographic background. Overall, there is considerable similarity with the description provided here and that of 217 U.S. serial murderers from a study by Canter, Missen, and Hodge (1996) in terms of age, previous convictions, dysfunctional family background, and educational background.[2] There is, however, a marked discrepancy with the IQ levels that are reported by Canter et al. for their sample. They state that 56% of the U.S. serial murderers in their sample had IQ scores above 120. Only 5.4% of the German serial murderers were measured with IQ scores greater than 120. This difference could be due to the fact that Canter et al. relied partly on secondary sources such as newspaper reports and magazine articles for the data collection. These sources may not be as accurate as the psychiatric or psychological assessments of the offenders that were used in the present study.

In comparison with a larger sample of German single-homicide offenders from an earlier study (Rode & Scheld, 1986), the

individuals in the present sample are more likely to meet criteria that can be interpreted as signs of antisocial lifestyle, alienation, social maladjustment, and anomaly. Therefore, it seems plausible to infer that serial murderers are not just homicide offenders who happen to be more prolific, all else being equal. It appears to be their greater risk of suffering from personality disorder, brain damage, impulsiveness, and so forth that predisposes them to commit their crimes.

This interpretation may, however, not be warranted. As the assessments of the individuals were all made post hoc, it is not clear whether the perpetrators had already been more deviant at the outset of their respective series. It may be, as well, that the experience of repeated killing affects both the offenders' psychological state and their social situation. This poses a methodological issue for further research. Future studies on the characteristics of serial murderers could use the time span that elapsed between the first homicide and the apprehension of the offenders as a covariant measure. This may shed light onto the question of whether serial murderers show greater signs of deviation the longer the duration of their series is.

According to Canter (2000), examining the differential salience of offense actions across one offense class opens up the possibility of inferring distinctions between the individuals that commit crimes within that class. In the present study, only one such distinction was made, that is, between sexual murderers and the remaining individuals in the sample. The fact that there are only 22 individuals in the sample whose offenses are sexual indicates that the notion of the serial murderer as a sex killer or lust murderer (Egger, 1990; Giannangelo, 1996; Lunde, 1976) is clearly an oversimplification. Nevertheless, marked differences become apparent between the sexual murderers and the remaining offenders. The sexual murderers are significantly younger at the time of their first offense than the other individuals. Furthermore, the sexual murderers favor a manual way of killing their victims and are diagnosed with a variety of sexual disorders.

Turning to the crime-scene behavior of the 61 serial murderers, rational shifts become apparent in the modus operandi for 59.1% of them. This puts a limit on the utility of modus operandi characteristics for linking cases. On a more fine-grained level, some offenders are more likely to persevere with signatures, that is,

idiosyncratic peculiarities in their offense behavior that are not necessarily goal-oriented strategies. However, not all individuals display such signatures; indeed, less than a quarter of the offenders in this study could be identified as demonstrating specific behaviors in all of their murders. Nevertheless, the identification of signatures promises to be more useful for solving the crimes of sexual murderers than of other types of serial murderers because the results revealed that sexual murderers are more likely to have such signatures.

Future studies should address the question of differential behavioral consistency in more detail. It is plausible that some offense actions are more likely to remain consistent, whereas others may be more likely to be context specific. If this is the case, expert systems for linking cases, such as *ViCLAS* (Bundes-kriminalamt, 1999), should be adapted to capture these differences and utilize them, possibly by attaching more weight to items that generally turn out to be less dependent on the context.

The results are exhaustive of the population of convicted serial murderers in Germany from 1945 to 1995 because the sample comprises all these individuals. This does not mean, however, that the findings are representative of German serial murderers in general. As discussed before, there are series of homicides in Germany that remain unresolved. It is conceivable that this could have lead to a systematic bias in the present study. The serial murderers that are not apprehended may be much more or much less intelligent, for example, than those who are finally identified by the police. Although unlikely, such a systematic bias is not entirely out of the question. Therefore, it should be kept in mind that the present findings refer to convicted serial murderers only. For instance, when calculating likelihood from the figures reported here for empirical offender profiles, the values should be regarded as estimates or approximations not as true scores.

Particularly with respect to the IQ values reported in this study, a caveat seems appropriate. A variety of intelligence tests were used by the psychiatrists and psychologists who had assessed the offenders originally. We extracted the IQ values from their reports directly. The variety of methods of assessment involved, as well as likely differences in the objectivity of conducting the tests and interpreting the responses, may limit the generalizability of these findings. However, it is implausible that such a potential bias

would be systematic by either exaggerating or diminishing the score for the majority of individuals. Hence, the observed distribution is likely to be an approximation of the true distribution in the sample.

Keeping these limitations in mind, it may be possible to use the frequencies of characteristics reported for the serial murderers in the sample to infer the likely characteristics of serial perpetrators in ongoing investigations in Germany. In accordance with the procedure outlined in Davies (1997), the base rates derived from a suitable sample can be used as a best guess for the characteristics of the perpetrator in an unsolved case.

Finally, more comparative, cross-cultural research is needed to find out to what degree the environmental, legalistic, and cultural peculiarities of a society have an impact on shaping the serial murderer and his crimes. We put forward a definition of the serial murderer and hope that other researchers will use it so that the findings from subsequent studies will lend themselves to cross-cultural comparison more easily. In particular, we believe that future research should attempt to delve into the etiology of serial murder. Due to the limited accessibility to serial murderers, a conventional nomothetic approach seems out of the question. Rather, ideographic case studies that highlight salient features of the individuals seem appropriate, and we encourage their use.

NOTES

1. We utilize the masculine pronoun throughout our discussion because of the predominance of male perpetrators as serial killers.

2. Canter, Missen, & Hodge (1996) defined the serial murderer as someone "who has committed more than two murders over a period of time" (p. 2). Although relatively vague, this definition is more or less congruent with the one used for the present study and allows for our comparison with their results.

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