

**INVESTIGATING SERIAL MURDER: CASE LINKAGE METHODS EMPLOYED BY
THE SOUTH AFRICAN POLICE SERVICE**

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I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references.



15 January 2017

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ABSTRACT

The aim of this descriptive research was to determine the methods of case linkage (methods to link murder cases to each other as well as to link the murder series to one offender) employed by the South African Police Service (SAPS) to investigate serial murder in South Africa and to comprehensively explain them. A qualitative approach was employed with a multi-method data collection process which included case study, interviews and literature review in order to gain an in-depth understanding of the subject.

The methods of case linkage are explained within three phases of a serial murder investigation: the identification phase, the investigation and apprehension phase, and the trial and sentencing phase. The main findings of the study revealed the need for further training of the SAPS members and the need for a Standing Operating Procedure to be implemented to specifically govern the system of investigation for a serial murder case.

Key Terms: serial murder; case linkage methods; *modus operandi*; signature; DNA; expert witness; profiling; case linkage; crime scene investigation; police procedure; linkage blindness.

LIST OF ABBREVIATIONS

AFIS	–	Automated Fingerprint Identification System
ATF	–	Bureau of Alcohol, Tobacco, Firearms and Explosives
BAU	–	Behavioural Analysis Unit
BRIU	–	Behavioural Research and Instruction Unit
CAS	–	Case Administration System
CCU	–	Commercial Crime Unit
CGT	–	Criminal Geographic Targeting
CIAC	–	Crime Information Analysis Centre
CIRG	–	Critical Incident Response Group
CODIS	–	Combined DNA Index System
CPF	–	Community Policing Forum
CR & CSM	–	Criminal Record and Crime Scene Management
CRC	–	Criminal Record Centre
CRFSS	–	Criminal Record and Forensic Science Services
CSI	–	Crime Scene Investigator
CSIR	–	Council of Scientific and Industrial Research
CSM	–	Crime Scene Management
DNA	–	Deoxyribonucleic Acid
FBI	–	Federal Bureau of Investigation
FCS	–	Family Violence, Child Protection and Sexual Offences Unit
FIPS	–	Fingerprint Identification Profile System
FSL	–	Forensic Science Laboratory
GIS	–	Geographical Information System
GPS	–	Global Positioning System
HEAT	–	Homicide Evaluation and Assessment Tracking System
HITS	–	Homicide Investigation Tracking System
IBIS	–	Integrated Ballistics Identification System
IPS	–	Investigative Psychology Section
ISCAS	–	Iowa's Sex Crimes Analysis System
LCRC	–	Local Criminal Record Centre
MFC	–	Major Crime File
MO	–	<i>Modus Operandi</i>

NCVAC	–	National Center for the Analysis of Violent Crime
NFDD	–	National Forensic DNA Database
OCU	–	Organised Crime Unit
PCR	–	Polymerase Chain Reaction
Q-PCR	–	Quantitative Polymerase Chain Reaction
SA	–	South Africa
SANAB	–	South African Narcotics Bureau
SAPS	–	South African Police Service
SOP	–	Standing Operating Procedure
STRs	–	Short Tandem Repeats
SVC	–	Serious and Violent Crime (Units)
TISC	–	Technological Investigation Support Centre
UK	–	United Kingdom
UNISA	–	University of South Africa
UNODC	–	United Nations Office on Drugs and Crime
USA	–	United States of America
VIC	–	Victim Identification Centre
ViCAP	–	Violent Criminal Apprehension Program
ViCLAS	–	Violent Crime Linkage Analysis System

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CHAPTER 1: INTRODUCTION, RESEARCH RATIONALE AND METHODOLOGY

“Whoever fights monsters should see to it that in the process he does not become a monster. And when you look long into an abyss, the abyss also looks into you” (Nietzsche, 1966:89).

1.1 INTRODUCTION

The United Nations Office on Drugs and Crime (UNODC) global study on homicide estimated a total of 437 000 people died as a result of intentional homicide in 2012. The largest portion of that was recorded in North and South America (36%), next was Africa with 31 percent, then Asia with 28 percent. Europe and Australia held the lowest rates with 5 percent and 0.3 percent respectively (UNODC, 2013:15). Most people use the terms “murder” and “homicide” interchangeably, but Brookman (2005:3-8) gives an explanation of “homicide” as the killing of one person by another, however, homicide can further be deconstructed into categories that include murder, culpable homicide, infanticide, etc. “Murder” is a form of intentional or criminal homicide which is defined as the unlawful and intentional killing of one person by another.

Urban areas tend to have higher rates of homicide than rural areas, even though both risk and protective factors exist in cities (UNODC, 2013:27). For example, urban areas can facilitate homicide with the existence of income inequality, anonymity within a dense population; and the presence of gang violence, to name a few. On the other hand, a higher degree of visible policing, easier access to medical and educational facilities and infrastructural factors like street lighting and security cameras can mitigate the incidence of homicide. But every city, in fact, every neighbourhood could have traits that influence the incidence (UNODC, 2013:29). Demographically, all serial murderers recorded in South Africa since the 1950s were male, thus, for purposes of this study, a serial murderer will be referred to as male (Geach, 2014:1).

Serial murder has been defined by many researchers from many disciplines and, while they share a common theme, the requirements differ. In 2005, the Federal Bureau of Investigation (FBI) hosted a multi-disciplinary symposium on serial murder with the goal to have a group of respected experts on serial murder identify consistencies of knowledge on the subject. The attendees agreed on the following factors to be included in an accurate definition of serial murder that is purposed for law enforcement (FBI Symposium, 2005:9):

- Includes one or more offenders;
- Two or more murdered victims;
- The crimes should occur at different times;
- A time period between murders exists (a 'cooling-off' period).

Holmes and De Burger's study on serial murder (1985) proffers four kinds of serial murderers. This typology was developed after Holmes and De Burger interviewed incarcerated serial murderers in the United States of America (USA) and studied numerous homicide cases. The types of serial murderers are based on the murderer's motive, pattern of homicidal behaviour and decision making process. They are as follows:

1. **Visionary Type:** driven by voices or visions which command the murderer to enact lethal action against a defined group of people.
2. **Mission Type:** have mission or task to complete, for example, to eliminate a certain faction of people from society, i.e. prostitutes or homosexuals.
3. **Hedonistic Type:** derives pleasure from killing and/or because financial gain can be acquired as a result. Within this category are three subtypes that emerge, namely, lust, thrill and comfort killers.
4. **Power/Control Type:** the goal of this type of murderer is to have total domination over the victim.

There is a debate amongst researchers about whether the incidence of serial murder has increased or remained constant over the years. According to Sears (1991:x) official crime statistics in the United States of America (USA) show that 4 859 murders were committed in 1988 with vague or unknown motives. He further notes that strangers perpetrate the murders of 10 000 to 12 000 people per year and, of that amount, 5 000 are victims of serial killers. These figures are similar to those that

the FBI released on crime statistics for 2012 in the USA. These statistics indicate that, out of a total of 12 765 murder victims, 4 582 were killed without known circumstances surrounding the crime (FBI, 2012). Sears (1991:x) implies that the nature of serial murder complicates the estimation of accurate numbers of serial murderers and their victims. Even though the number of serial murderers in the USA is significantly higher than that in South Africa, it does not necessarily mean that the USA has an above average incidence. This may indicate that the USA is just better adapted to identifying serial murder than South Africa and that more research has been done on the incidence of serial murder in the USA (Snyman, 1992:36). However, these statistics could merely be higher because the USA simply has a larger population than South Africa.

Snyman (1992:36), after reviewing Sears' comment on the 1988 crime statistics in the USA relating to murders committed with an unknown motive, asserted that "recordings of and research into serial murder is not as complete and comprehensive in other countries as in the USA". He also highlighted that it is impossible, in his opinion, to establish the extent of serial murder in South Africa due to the lack of meticulous information recording with regard to statistics. Even though Snyman's comment was made 24 years ago, it is still valid today. Malby (2010:7) reiterates that "significant data challenges remain however, particularly in Africa, where criminal justice data on intentional homicide is presently very limited".

Investigative difficulties also contribute to the lack of recognition of serial murder cases. Hickey (2003:420) cites the main challenges of a serial murder investigation as being offender identification and crime linkage with factors such as lack of motive, random victim selection, geographic mobility of offenders and linkage blindness contributing to the problems. Hickey (2003:420) is of the opinion that forensic DNA analysis, case linkage systems and profiling as approaches may have the potential to manage the issues.

1.2 RESEARCH AIMS

The aim of this research was firstly, to determine the methods of case linkage (methods used to link murder cases to each other as well as to link the murder series to one offender) employed by the South African Police Service (SAPS) to investigate serial murder in South Africa. Secondly, to examine in detail what these linkage analysis methods entail. A comprehensive explanation of the methods, as well as in which phase of a serial murder investigation they are applied, were documented. Scrutiny of the case linkage methods revealed areas for continued development in terms of the application of these theoretical methods to an investigation (case linkage techniques), thus a third aim included proposing recommendations to make the case linkage methods more efficient.

1.3 PURPOSE OF THE RESEARCH

The purpose of this research was to establish the case linkage methods of the SAPS and to explain these methods fully in order to gain a better perspective of serial murder investigations in South Africa in terms of their ability to link cases that form a murder series to one another as well as to the perpetrator. During the documentation of the findings of the research, it was found that the case linkage methods of the SAPS can be improved and the researcher endeavoured to provide possible recommendations to do so.

1.4 RESEARCH RATIONALE

The apparent random selection of victims by a serial murderer puts everyone at risk and is a socially significant problem. The nature of this type of crime leaves investigators with a large pool of suspects and a lack of evidence, with no guide for the investigation and resolution thereof (Egger, 1985:4-8). Hodgskiss (2004:69) states that the South African murder rate is much higher than the international murder rate. It must be remembered, however, that police are not in control of what crimes the public report, but if the community members see that the criminal justice system is performing effectively, they will become more inclined to report a crime (Leggett, 2003).

The reason behind choosing the case linkage methods of the SAPS and the analysis thereof as a study subject is due to the researcher's involvement within the policing environment and, therefore, she has a vested interest in improving the methods of investigation of serial murder crimes in South Africa.

Understanding the benefits of case linkage can help law enforcement managers justify the allocation of resources needed to develop techniques and methods that aid in the linking of crimes. If an offender is charged with several crimes, rather than just the crime he/she was arrested for, the offender is more likely to receive a heavier sentence, effectively removing the offender from society for a longer period and stemming criminal activity. Having case linkage tools at their disposal will allow law enforcement to effectively link crimes and share information about crime trends, patterns and a series across jurisdictional boundaries (Osborne, 2001:9). The South African community benefits immeasurably since a more effective investigative service will prevent serial murderers from operating indefinitely as linkage blindness would be reduced.

The analysis of case linkages involves the examination of crime information, which is an integral part of crime intelligence. If an investigator is provided with as much data as possible with regard to a crime scene, it becomes easier for him/her to draw conclusions about the crime scene as well as the offender. Horne (2009:68) asserts that the "correct and successful collection of crime information can ensure the success or failure of a forensic investigation process". The crime analysis needs of the SAPS are met by the Crime Information Analysis Centre, which processes crime information by the application of various techniques. This analysis process provides information regarding criminal cases to the criminal justice system and aids in tracking and incarcerating offenders (Horne, 2009:71).

1.4.1 Problem statement

According to Bak (2004:20), a research problem denotes the focus point of a study; a departure point that narrates the way in which the research will develop.

Besides the Violent Criminal Apprehension Program (ViCAP), initiated by the FBI, other systems are in place in the USA as computerised crime linkage systems. These systems include Washington State's Homicide Investigation Tracking System (HITS), New Jersey's Homicide Evaluation and Assessment Tracking System (HEAT) and Iowa's Sex Crimes Analysis System (ISCAS). Canada also operates similar systems which are the Royal Canadian Mounted Police's Major Crime File (MCF), and its successor, the Violent Crime Linkage Analysis System (ViCLAS). Law enforcement agencies have used computerised linking systems to determine if a series of crimes have been perpetrated by the same person. The computerised linking systems draw information from case files such as offence, offender and victim information. This illustrates how technology is poised to take policing to the next level (Bennell, Snook, Macdonald, House & Taylor, 2012:2-4).

Hazelwood and Warren (2004:307) refer to case linkage or, as they refer to it, "linkage analysis" as a process of behavioural analysis which examines and incorporates information from the *modus operandi* of the offender; the ritual or fantasy-based behaviours from a series of crimes and the signature to determine if a series of crimes have been committed by the same offender. Labuschagne (2006:184) purports that Hazelwood and Warren overlooked another important aspect with regard to case linkage, which is geographical behaviour.

According to Woodhams, Bull and Hollin (2007a:118), case linkage can be defined as "a process that aims to identify crimes that are likely to have been committed by the same suspect because of behavioural similarity across the crimes." Besides identifying that the same offender is responsible for a series of crimes, case linkage can be presented in court as supportive evidence. Woodhams et al (2007a:118) also state that case linkage may be similar to profiling in that both approaches are used to investigate crimes committed by unknown perpetrators because they share the assumption that criminals are consistent in their behaviour across crime scenes. However, the authors regard profiling as a sister field.

A general overview of profiling is that it is intended to understand crime from both the offender's and the victim's perspective. More specifically, the objective of profiling is identification of the offender (if the offender is unknown), by means of predicting what

kind of person is most likely to offend in given circumstances and what kind of person is most at risk to become a victim (Kocsis, 2007:ix). In the SAPS, profiling can also involve entering a known suspect's name or date of birth into various SAPS databases in order to glean as much information about the known suspect as possible. These databases include the Vehicle Registration System, Case Administration System (CAS), Home Affairs databases and the Firearms Registration System (Labuschagne, 2003:69).

There are many types of case linkage: offender profiling, victim profiling, DNA profiling, crime scene profiling, psychological profiling, case linkage analysis, behavioural evidence analysis, investigative psychology and geographical profiling (Hickey, 2003; Woodhams et al, 2007a; Canter, 2004). But which methods do the SAPS use to investigate serial murder? And what exactly do these methods entail? Are they efficient and infallible, or is there room for improvement? In providing a detailed explanation of these case linkage methods, the researcher discerned opportunities for enhancement of these methods or techniques employed by the SAPS and proposed recommendations in this regard.

1.4.2 Research questions

A well thought out research question should indicate the end result of what one may expect at the conclusion of the research and gives an understanding of why the research was conducted (Dantzker & Hunter, 2012:40).

In this study, methods of case linkage used by the SAPS when investigating a case of serial murder are under review. Thus, the research questions flow directly from the research aims and purpose of the study:

Q1. What case linkage methods do the SAPS use to investigate serial murder?

This question was answered by means of literature review on the subject from a South African perspective, case studies on occurrences of serial murder in South Africa and interviews with personnel who have been involved in serial murder investigations as well as the linking of cases for the SAPS. The methods of linking

cases to one another (to form a murder series) as well as the linking of a number of murders (the murder series) to one specific offender will be analysed.

Q2. What do these case linkage methods entail?

A detailed explanation of the methods is given using literature review, case studies and interviews as data sources. The researcher also stated during which phase of the serial murder investigation these methods are employed, i.e. during the identification phase, the investigation and apprehension phase, and the trial and sentencing phase.

While verifying the findings of this study, the researcher observed possible ways to improve the case linkage methods or techniques employed by the SAPS and proffers recommendations for the SAPS to take into account to streamline one or more of the case linkage methods or techniques.

1.5 PROBLEMS ENCOUNTERED

Upon interviewing members of the Investigative Psychology Section (IPS) of the SAPS, it became apparent to the researcher that she could not delve into an intricately detailed description of the IPS linkage analysis matrix as well as the information contained therein in order to prevent this study from becoming a 'What-not-to-do' guide book for criminals. This problem did not hinder the main purpose of the study, but only limited the detail allowed for one such case linkage method.

As the criteria set by the researcher for data collection from case studies was precise, another problem encountered was that there were fewer than expected IPS serial murder cases that fit the criteria. The researcher could only obtain seven cases that met the benchmarks of the criteria. However, the unique identifying numbers of these seven cases were placed in a container in accordance with the conditions set out by the researcher and three case studies were chosen from there.

A final problem encountered by the researcher was language. English was the first language of only six of the 23 respondents. Since the study was being conducted in English, it resulted in some respondents misunderstanding certain questions. The main question that caused confusion was regarding which case linkage methods/systems/techniques are currently in place to aid in the investigation of a murder series to link the series to a specific offender. The researcher overcame this problem by elaborating in simpler English on what kind of information was needed from the respondent to answer the question.

1.6 RESEARCH METHODOLOGY

This study applied the qualitative approach to research with a multi-method data collection process which includes case study, interviews and literature review in order to gain a better understanding of the methods of case linkage in serial murder investigations undertaken by the SAPS.

Denzin and Lincoln (2005:3-4) define qualitative research as involving “the studied use and collection of a variety of empirical materials”. These materials include case study, personal experience and interview that express the significance of the subject under study in people’s lives. They further state these qualitative “interconnected interpretative practices” are employed to gain a deeper understanding of the observed phenomenon.

Tewksbury (2009:38) is of the opinion that the qualitative research method is more advantageous when undertaking a criminological study as it provides a detailed understanding of crime, criminals and the justice system which outweighs the value of impersonal statistical analyses. He states the difference in methods of data collection and analysis as his main reason for this opinion. Qualitative research deals with the opinions, experiences and feelings of individuals, produces subjective data and explains social phenomena without attempting to manipulate the situation (Hancock, 1998:2). Thus, this approach allowed for the incorporation of the opinions of the individuals involved in the investigation of serial murder with regard to their experience with case linkage.

Qualitative research is focused on expounding explanations for social phenomena. It aids with rationalisations for behaviours and the effect on society (Hancock, 1998:2). Choosing an appropriate research design and methodology is of paramount importance and will allow the researcher to carry out the goal of the study as straightforwardly as possible. If an unsuitable approach is chosen, the outcome of the study may be affected.

According to Van Wyk (2012:9), the research design envisages what data is required, what methods are going to be used to collect and analyse this data, and how this relates to answering the research question. The research design used by a researcher will differ depending on the purpose of the study, the research question(s), and the skills of the researcher (De Vos, Strydom, Fouché & Delpont, 2005:268-269). The research design also reflects the purpose of the inquiry, the main types of which are exploration, description, explanation, prediction, evaluation and history (Van Wyk, 2012:9). The aim of this research was to provide an accurate and valid representation of the factors that are relevant to the research question, i.e. describing the methods of case linkage that the SAPS employ to investigate serial murder cases. Thus, the purpose of inquiry of this research is to produce a description.

An empirical research methodology was employed by the researcher as the knowledge obtained from an empirical study is based on experience or observation (Maxfield & Babbie, 2015:7). The researcher obtained the information from the respondents, who have knowledge based on skill and experience in their field. This allowed the researcher to gain a detailed understanding of the topic in question and to categorise the themes of the study to verify the findings together with the case studies.

1.6.1 Target population and sampling: case studies

A population, as defined by Kraska and Neuman (2012:129), is a large pool of cases from which the research must draw a sample to properly represent the population. The target population is the specific pool of cases that the researcher wants to study. In this study, the population for the case studies was a large pool of cases that the

SAPS have investigated. The target population, as the specific pool of cases to be studied, was serial murder investigations that have involved the IPS since their inception in 1997. To allow every case that meets the criteria a fair chance of being selected, a simple random sampling method was used (Dantzker & Hunter, 2012:112-114).

The reason for IPS cases specifically being chosen is that members of the IPS are involved in most serial murder investigations in South Africa and their office is centrally located in Pretoria. The target pool of cases must adhere to the following criteria in order to be eligible for selection:

- The cases must involve a serial murder investigation (more than two cases linked to each other) that the IPS was involved in since its inception in 1997;
- The cases must have been investigated within the Gauteng jurisdiction;
- The cases must have been solved;
- The alleged serial murderer must have stood trial; and
- The alleged serial murderer must have been sentenced.

However, as previously mentioned, a problem encountered by the researcher was that the criteria set out above only allowed for seven cases to be eligible out of approximately 30 serial murder cases. These 30 cases were present in the case filing room of the IPS. There may have been more cases that could have formed part of the target pool of cases, but the case files may have been located elsewhere, such as, in the personal offices of the IPS members, which the researcher did not have access to. A unique reference number was assigned to each of these seven cases. A simple random sampling method was employed by putting the numbers into a container and blind-selecting them from there. Three of the cases were selected from the container and discussed in further detail.

The information contained within the IPS case files are not collated in a standardised manner as the members analyse diverse information from many sources in different ways in order to compile a linkage matrix or a report on findings. This unsystematic methodisation of the information compelled the researcher to opt to describe the cases in the narrative rather than a statistical representation of data. For this reason,

the cases chosen are not a representative sample of serial murder cases in South Africa, but still serve to illustrate case linkage methods used by the SAPS as these cases were successfully resolved. The data explained by the researcher is still rich with information that correlates to the findings made in the interviews with respondents. Each case, depending on its circumstances, was discussed in relation to a different phase of the serial murder case, i.e. the identification phase, the investigation and apprehension phase, and the trial and sentencing phase.

1.6.2 Target population and sampling: interviews

Specific members of the SAPS who are/were involved in serial murder investigations were unknown to the researcher, therefore, snowball sampling was the method used to identify specific participants. Snowball sampling, also known as network, chain referral or reputational sampling, is a multistage technique. It is a method of non-random sampling to identify an interconnected group of people who are linked by a common factor. It begins with one or a few people or cases and then expands based on links to the primary cases (Kraska & Neuman, 2012:141). Members of the IPS were the starting point for the snowball sampling technique employed in this study. As they are directly involved with serial murder investigations, they are most likely to lead the researcher to the members of the SAPS who are/were involved in the investigation of serial murder cases (Detective Service members). Members of the Forensic Services Division of the SAPS also formed part of the target population. These members conduct examinations on the physical evidence found at crime scenes and compile reports on their findings and also link cases by means of automated systems (e.g. DNA Database).

Thus, the target population of the study included members of the IPS, members of the Detective Service and members of the Forensic Services Division of the SAPS. These members of the SAPS were whom the researcher conducted interviews with to collect the data needed for the study.

1.7 DATA COLLECTION

Data collection methods involve many sources of information that are rich in context and may include interviews, documents and observations (Creswell, 1998:120). This research employed the data collection methods of interviews, case study of documents and literature study. Data was collected with the objective of determining the methods of case linkage when investigating serial murder in South Africa in relation to the identification phase, the investigation and apprehension phase, as well as the trial and sentencing phase. During data collection, the researcher wrote copious notes of all information that was relevant to the study.

1.7.1 Case study

Rather than a direct observation of criminal behaviour or interviewing convicts themselves about their criminal activities, the researcher chose to peruse records that are kept by public agencies such as the police and courts as this approach yielded approximately the same information as the direct approach but was more user-friendly (Maxfield & Babbie, 2015:356). For purposes of this research, the documents studied were closed/solved case files of the IPS containing all information relating to a serial murder investigation.

Case study is regarded as secondary data, as these cases have already been investigated and closed, i.e. information has been previously collected and analysed in order to solve the case (Blaxter, Hughes & Tight, 2001:170). Thus, by studying the case file, the researcher gleaned a sense of the overall case which included who was involved in the investigation, the role they played, what case linkage methods and/or techniques were used to solve the case in question, and any identifiable incidences of linkage blindness. The researcher spent time in the case filing room of the IPS where many case files of serial murder investigations are kept. Much time was spent examining each case file to ensure that they adhered to the criteria set out for this study. As previously mentioned, the data contained in the case files were not standardised and did not all contain the same information, which made the analysis of case file time-consuming. Many notes were made by the researcher on the case studies to make the data analysis process simpler.

However, not all case linkage methods used by the SAPS were used to solve the specific cases selected at random from the target pool of cases thus, in order to gain a fuller understanding of further case linkage methods, interviews were also conducted with individuals involved in serial murder investigations.

1.7.2 Interviews

The method of interviewing entails questioning or discussing issues with individuals and can be a more valuable method for collecting data than observation as it is more accessible (Blaxter et al, 2001:172). Interviews can be highly structured, semi-structured or unstructured. Structured interviews entail the interviewees all being asked the same question, similar to a questionnaire, to determine their opinion on a topic. Semi-structured interviews allow for the researcher to be involved in the discussion directly to prompt a more elaborate response or a follow-up question from the respondent's original answer. Unstructured interviews begin with the interviewer having one or two topics to discuss in-depth. The subsequent questions follow from the first question regarding the topic (Hancock, 1998:9-10).

Since the aim of the researcher was to gain a comprehensive impression of the respondents' experience with case linkage methods when investigating serial murder, this study employed the use of semi-structured, face-to-face interviews. These are more personal than a questionnaire and allowed the freedom to pursue a line of questioning while still retaining the objective of the interview and not veering too far off the topic. This type of interviewing also made it possible to clear up any confusion that arose from the questions and, since the researcher could perceive nonverbal cues from respondents, to draw out more reliable responses or ask the respondent to clarify an answer (Dantzker & Hunter, 2012:128). The researcher interviewed all 23 of the respondents individually. The interview schedule is attached as Annexure B.

The respondents were identified based on the snowball sampling method. Personnel interviewed included persons affiliated with the target population of cases mentioned above, such as members of the IPS (those who are knowledgeable on the subject of serial murder investigations specifically), members of the SAPS Detective Service who were involved in the serial murder cases in an investigative capacity and

members of the Forensic Services Division who conducted forensic-based examinations and/or operated computerised linkage systems to link cases in order to aid the serial murder investigation.

1.7.3 Literature review

When the researcher conducted the preliminary literature review for the research proposal, she visited the library at the UNISA main campus in Muckleneuk, Pretoria. The library catalogue as well as the UNISA online catalogue was searched for the research topic. Neither of these sources revealed literature on the same topic as the researcher, so the topic was broken down into concepts, which included serial murder, crime scene investigations, case linkage, linkage analysis, police procedure and profiling. By doing this, literature relevant to the study was found. After consultation with members of the IPS, literature relevant to the topic was shared with the researcher by the members.

What works for one country to solve a case of serial murder may not necessarily be applied across the board to solve the global phenomenon of serial murder (Gorby, 2003:422-423). Thus, a comparative component to this research was beneficial to illustrate the similarities and/or differences that may exist. The USA has had an operational national crime database (ViCAP) since 1985 and from 2008, it became available to all law enforcement agencies via a secure link with approximately 4 000 agencies contributing cases (FBI, 2010). This database makes the USA a leading country in the world with regard to the collection and access of information relating to serial murder crimes. Therefore, a review of American literature was integrated into the study as a comparative element with South African literature.

The review of literature allows for a comparison between South Africa and the USA in terms of similarities and differences seen when investigating serial murder crimes as well as characteristics of the offenders and the crime scenes. The researcher draws conclusions as to the similarities and/or differences between South Africa and the USA in terms of case linkage when investigating serial murder.

1.8 DATA ANALYSIS

Qualitative data analysis is dependent on descriptions for “identification of recurrent patterns or themes and attempting to construct a cohesive representation of the data”. It is the duty of the researcher to find patterns or connections within cases or issues in order to make a valid interpretation of the matter under study (Tewksbury, 2009:52-53).

After reviewing the work of authors Bogdan and Biklen, Huberman and Miles, and Wolcott, Creswell (1998:140-142) recommends that the analysis of qualitative data is threefold. Firstly, he suggests getting a general idea of the data by reading and re-reading it. Secondly, he advocates categorisation of the data and finally, to represent the data in a table, figure or text format.

The content analysis approach was regarded as the most appropriate method of data analysis for this research as it is a systematic and objective process of describing and quantifying phenomena. The object of content analysis is any kind of recorded communication or written documents which allow the researcher to enhance the understanding of the data. The central tool of any content analysis is a system of categories, with every unit of analysis coded and allocated to one or more categories (Elo & Kyngäs, 2008:108).

Deductive content analysis categorises data moving from the general to the specific (Elo & Kyngäs, 2008:109). Keeping this and Creswell’s view in mind, the following steps were taken by the researcher to conduct a data analysis:

- Step 1: After all data was collected, the researcher spent much time reading the data (interview transcripts and case studies) to acquaint herself with it. Notes were made in the margins regarding possible categories;
- Step 2: After identifying “case linkage methods employed in serial murder investigations” as the general category of data, each respondent’s transcript was coded and their answers were allocated to a specific category, i.e. the identification phase, the investigation and apprehension phase, and the trial and sentencing phase. The categories were then further broken down into

specific case linkage methods associated with a phase of the serial murder investigation and explained in detail. E.g. DNA, cell phone tracking analysis, fingerprints, Integrated Ballistics Identification System (IBIS) and offender profiling as case linkage methods employed during the investigation and apprehension phase. This data is represented in a structured matrix format;

- Step 3: The case studies were then coded and allocated to the same categories as mentioned above and represented in text format for description purposes;
- Step 4: Themes and relationships within the data analysed in steps 2 and 3 were then examined using the data triangulation method to ensure that the findings were comparable, i.e. that findings from the interviews and findings from the case studies were similar. The analysis of the data is embodied in Chapter 4;
- Step 5: The data emerging from the themes and relationships of the findings was utilised to make recommendations for enhancing case linkage methods used by the SAPS. These recommendations as well as relevant considerations are represented in Chapter 5.

1.9 METHODS TO ENSURE VALIDITY

Validity refers to the question of whether the methods, approaches and techniques employed by the researcher actually correlate to the matters investigated (Blaxter et al, 2001:221). In keeping with this, at the end of the interview with each respondent, the researcher verbally confirmed their responses to ensure that the answers they gave were exactly what the researcher recorded in her notes. The interview questions themselves were open-ended and not leading. The researcher did not give specific examples of case linkage methods but allowed the respondents to formulate their own answers to the questions. Only elaboration on a question and information needed was given to the respondents if they indicated that they were unsure whether they understood the question correctly. The interview schedule was formulated by means of preliminary research done by the researcher in order to articulate the actual questions she wanted answered. This preliminary research included informal discussions with members of the IPS and studying literature on the subject.

The IPS case studies used were closed cases, so the researcher could not interfere with the outcome or findings of these cases. The literature reviewed by the researcher was from valid and reliable sources.

1.10 METHODS TO ENSURE RELIABILITY

Reliability principally relates to the consistency and trustworthiness of the data (Kraska & Neuman, 2012:263). The researcher was meticulous in choosing the sample for the personnel to be interviewed; all 23 respondents' have years of experience in their field and have been involved in one or more active serial murder investigations in one capacity or another (with the exception of Respondent 6). Thus, due to their sound knowledge of serial murder investigations, the reliability of the research was preserved. The researcher did not, at any time, influence the responses of the respondents. The questions contained in the interview schedule were formulated to elicit a straight-forward answer from the respondent without deviating from the targeted information.

The case studies that were selected have been solved, thus ensuring that the end result of the cases do not differ at any time. The information contained in these IPS case files, which was derived from reliable sources such as post-mortem reports from a trained pathologist and DNA reports from forensic experts, was relevant to the investigation of the case.

The data triangulation method of analysis, which was employed by the researcher, further guarantees that the findings from interviews, information from case files and literature sources are compared with each other to ensure reliability. The researcher explained in detail how the data collection and analysis were carried out, so any other researcher who chooses to conduct parallel research will find that the data collected cannot be tampered with and only the interpretation thereof may differ.

1.11 ETHICAL CONSIDERATIONS

Ethics, in this case, can be defined as "doing what is morally and legally right in the conducting of research" (Dantzker & Hunter, 2012:190). It has been proposed that

more ethical issues arise from qualitative research as the data collection methods generally necessitate direct contact between the researcher and the researched (Blaxter et al, 2001:158). Thus, ethical neutrality is required by the researcher, who should not allow her own moral or ethical views to manipulate the collection or analysis of data.

While undertaking this research, the utmost care was taken to ensure the ethical appropriateness of data collection methods and analysis techniques. The respondents were not exposed to undue physical or psychological harm. The interviews were conducted in the respondents' own workplaces and informed consent was obtained. Informed consent obliges the researcher to inform the subjects about the purpose of the research, any potential risks involved in participating, any advantages as well as the methods to be used for the research (Maxfield & Babbie, 2015:64). The respondents' consent implies that the researcher did not place any pressure on the respondents to participate in the study. All respondents had managerial approval to participate in the study. The respondents' privacy and anonymity was preserved by referring to them as "Respondent [number]" in the study and only generic personal and employee information was used to differentiate between them.

The researcher was honest with the respondents and did not mislead them with regard to the aims of the research nor did the researcher misrepresent any findings made in this study. As case files of the SAPS were examined and these case files contain restricted material, the researcher ensured the security and good maintenance of these sources while they were in her possession. The researcher obtained permission for the SAPS to conduct the research prior to the undertaking (Annexure A: Permission letter from the SAPS).

In terms of electronic sources, the researcher did not utilise any illegal sources or gain access to sources illegally. Plagiarism was guarded against and the researcher gave the necessary credit to any authors' work used. In terms of the UNISA Policy on Research Ethics, the researcher did not commit plagiarism, falsification or fabrication of results in study and all findings are reported truthfully and accurately. All research was undertaken with concern for public interest and social justice (UNISA, 2007).

1.12 TIME AND GEOGRAPHIC DEMARCATION

The study was limited to serial murder cases that occurred after the establishment of the Investigative Psychology Section in 1997.

The research was restricted to serial murder cases which occurred within the Gauteng Province of the Republic of South Africa.

1.13 CHAPTER ORGANISATION

Chapter 1 introduces the study and explains the rationale behind the research as well as describes the research design and methodology used to carry out the study.

Chapter 2 offers a detailed description of key concepts.

Chapter 3 provides a background to serial murder and the investigation thereof as well as includes literature review on case linkage methodology.

Chapter 4 presents the data collected and analysed in terms of case linkage methods used in serial murder investigations undertaken by the SAPS.

Chapter 5 deals with the findings and recommendations of the research as well as relevant considerations to take into account when investigating serial murder cases.

CHAPTER 2: CONCEPTUAL ANALYSIS

“The terms designating the things about which a science tries to make sense are its concepts” (De Vos et al, 2005:28).

2.1 INTRODUCTION

The abovementioned statement encompasses the definition of a conceptual analysis. In this Chapter, the researcher discusses certain important concepts to help the reader to understand these concepts in relation to investigating a serial murder case.

2.2 *MODUS OPERANDI*

Maj. L.W. Atcherley, Chief Constable of the West Riding Yorkshire Constabulary in England, broke new ground with the use of *modus operandi* (MO) analysis in police operations in 1896. Maj. Atcherley identified that offenders use the same technique at different crime scenes and he analysed this in order to track offenders from area to area. He also recognised individual characteristics of offenders at crime scenes and called this their ‘trademark’, which would later be known as the ‘offender’s signature’ (Keppel, 2000:122-123).

Hazelwood and Warren (2004:308) state that the term *modus operandi* is used to encompass all the behaviours needed by an offender to commit a crime successfully. This includes all the actions an offender takes to lure his victim and complete the crime while avoiding identification and apprehension. A serial rapist’s first victim may scream and attract attention, causing him to either let her go or rush the act to get away faster. In subsequent crimes of this nature, the serial rapist may bring duct tape with him to gag the victim before committing the crime, or even escalate to murdering the victim. Thus, the victim’s response also affects the MO of a perpetrator. Incarceration of the offender may also cause the MO to evolve in order to avoid arrest the next time he commits a crime. This illustrates that the MO is a learned behaviour that is dynamic and malleable (Douglas & Munn, 1992:2). In this way, it can be said that using MO to link crime scenes is complicated. If the MO in a murder

series is modified, the series may not be linked and the serial murderer would go unnoticed. A serial murderer's MO can change according to his need to control the situation (Brown, 2014:9).

Douglas and Munn (1992:4) warn against too great a measure being placed on MO to link a crime. Although MO plays an important role in case linkage, it should not be the only criteria examined. Investigators tend to identify more elements of MO at a crime scene than of the ritual (the motives of which are fantasy-based and highly personal to the offender), though some elements of MO may also serve as elements of the ritual but may not be recognised as such by the investigator (Hazelwood & Warren, 2004:310-311).

In order to maximise efficiency in the battle against crime, the SAPS put *modus operandi* forms into practice. The function of the forms is to collect MO information on reported crimes. A study was undertaken by Berning and Masiloane (2012:83-84) to assess the value of these forms in terms of collection, analysis and utilisation of the information gleaned from them. They state that, in order for the police to be effective in combating crime, they must be adept at collecting, processing and utilising crime information at any one of the following stages:

1. Information received before the commission of a crime: used as preventative measures for crime;
2. Information received during the commission of a crime: used to catch the offender in the act of committing a crime;
3. Information received after the commission of a crime: used to identify and apprehend the offender.

The *modus operandi* forms concentrate on the last stage, identification and apprehension by means of case linkage. However, the information on the forms, after being researched and analysed, can be used in the future for crime prevention. This study conducted by Berning and Masiloane (2012:88-89) found that the *modus operandi* forms are barely completed by the police officials and only comprised 26 percent of 700 randomly selected, analysed dockets. If the form was completed, the quality of the information contained was of little to no use for meaningful inferences to be drawn. The authors state that the ineptness and indifferent attitude of police

officers is the reason for the findings. They attribute this, in turn, to the laxity of managers who are responsible for the dockets and the members.

Sixty-eight percent of the detectives were uncertain as to what the information requested on these forms actually achieves, or how the information can aid their investigation. When the detectives were asked for their reason as to why they did not complete the forms, they held workload and ignorance of the value of the forms liable. Berning and Masiloane (2012:88-89) recommended that workshops be held countrywide to inform police officials of the value of the forms and to give them training on how to fill them out. They also hold supervisors and management responsible for ensuring their members' compliance with given instructions. It is unclear as to whether these recommendations made by Berning and Masiloane (2012) have been heeded by the SAPS. A further study would need to be conducted to examine this issue.

While South African courts use the same benchmark for the use of MO as evidence in cases, the American court system differs from state to state with regard to the significance placed on MO or signature evidence. The Supreme Court of Virginia held that, in order to qualify as admission of proof of MO for evidence of other crimes, the evidence does not need to be so alike to the case currently on trial that it is tantamount to the signature. It just needs to bear sufficient similarity to prove a pattern that was perpetrated by the same offender (Keppel, 2000:122-123).

2.3 SIGNATURE

Most serial offenders who commit violent crimes have been influenced by fantasies or daydreams. An offender's need to outwardly express the fantasies sometimes leaves a signature or 'calling card' at the scene of a crime in the form of unusual characteristics or excessive, unnecessary force used (Douglas & Munn, 1992:3).

If the offender commits acts or engages in behaviour that goes beyond what is needed to commit a crime, his signature is exposed. Some examples of signature that may be found at crime scene include: the offender using a specific type of

binding, atypical injuries that have been inflicted on multiple victims, displaying of the body, mutilation of the victim(s) and unusual sexual fetishes (Keppel, 2000:124).

Unlike the MO, the signature of an offender never changes as it is a fundamental part of the offender's behaviour (Douglas & Munn, 1992:3). However, even though the behaviour already goes beyond what is needed to commit the crime, it can escalate further in terms of the degree of force used or the extent of mutilation (Douglas & Munn, 1992:3). Hazelwood and Warren (2004:311) agree with Douglas and Munn but also postulate that the signature may include elements of both MO and ritual and must occur at a minimum of two crime scenes to be considered a signature.

Brown (2014:8) believes that it must not be assumed that a signature is present at all crime scenes, when, in fact, a signature is exceptionally rare. A large number of offenders do not add unusual touches to a crime scene that make them personal to the offender, for whatever reason. Most psychologists and/or profilers describe the signature as a feeling they get at crime scenes identifying them as a series committed by one offender.

If identified correctly, the signature of an offender could aid investigators in recognising that the crimes were probably committed by the same offender. In this way, case linkage can be used to identify a serial murderer operating in the area or later in court, used to link various crime scenes to that offender. The methodology for determining the signature and MO of an offender is similar to drawing up a profile for a case. The main differences are the type of information used and the end result (Labuschagne, 2006:191). An analyst may give expert testimony on a signature as a case linkage tool. However, the analyst must be qualified through education as well as experience. The final decision to utilise the evidence of linkage analysis in courts lies with the presiding officer (Hazelwood & Warren, 2004:311-312).

2.4 EXPERT WITNESS

When matters arise in law that concern other sciences or faculties, it is within the reach of the law to seek the opinion of an expert from that science or faculty. In 1908, Lois Brandeis introduced social science research to the courts in *Muller v Oregon*,

however, a criminologist was only utilised by South African courts in the mid-1980s (Van der Hoven, 2006:152). An expert can be defined as “person with the status of an authority (in a subject) by reason of special skill, training or knowledge; a specialist” (Sutherland, 2009:1).

The skill, training or knowledge referred to above encapsulates ‘scientific’ knowledge, which the judge generally does not possess. Scientific knowledge is an umbrella term for physical sciences (chemistry, physics, forensic science, biology), social sciences (psychology, sociology, economics) and technical sciences (engineering, statistical analysis or computer science) (Meintjes-Van Der Walt, 2000:58).

The field of criminology incorporates aspects of criminal law as well as social sciences and focuses on the causes, explanations and prevention of criminal behaviour. It concentrates on the *individual* involved in the criminal behaviour. Due to these factors, criminologists are expected to have attained at least a master’s degree in criminology in order to be considered as an expert witness. When criminologists perform an expert witness function in court, all relevant factors to *criminology* should be taken into account. For example, a criminologist cannot testify as to the mental capacity or psychological disorders of an offender in court, but he/she can testify during the trial phase as to the danger posed to society by the offender if he is released. When compiling a pre-sentencing report, a criminologist can state mitigating and aggravating factors of the offender’s behaviour and suggest sentencing terms and/or rehabilitation options. A forensic criminologist refers to the activities of a criminologist when collecting, analysing and presenting evidence in a court of law (Van der Hoven, 2006:152-157).

The role of an expert witness is to merely provide the court with the necessary scientific information so that the court can draw its own conclusions after understanding the scientific criteria correctly (Sutherland, 2009:2). In addition to the science of criminology, it is advisable for criminologists to receive training in the compiling of pre-sentencing reports, testifying in court, court procedures and even courses in criminal law and/or procedural law. The specific criteria for expert witnesses to be regarded as such are not expressly asserted by South African courts.

However, Van der Hoven (2006:159) sets out guidelines for expert opinion to be given in court:

1. The expert must have theoretical and practical knowledge of the subject he/she is expressing an opinion on. Practical knowledge is emphasised;
2. The presiding officer must be satisfied that the witness has all the necessary qualifications to testify as an expert witness;
3. The expert must provide the court with a detailed *curriculum vitae*;
4. If the expert was requested to compile a pre-sentence report for the court, the facts upon which the opinion is based must be included;
5. The expert is permitted to consult textbooks on the subject during testimony but this may be exercised as a reference and not the sole source; the expert's own experience and knowledge should be expressed;
6. The weight given to an expert's opinion depends on the expert's qualifications and the fact that the evidence can be verified;
7. The validity of the evidence itself. If a textbook is used, for example, it is tested by the reliability of the authors; and
8. The expert may be expected by the court to produce the specific textbook source that was used to help formulate his/her expert opinion.

In terms of specific procedure to abide by when actually giving testimony in court, the following rules should be observed (Van der Hoven, 2006:167):

1. The expert witness may be required to wait outside the courtroom before giving testimony. The lawyer should specify this to the expert beforehand;
2. The expert is required to bring numerous copies of the report to court for the presiding officer, the defence, the prosecutor, the translator and for himself/herself;
3. The expert must give a summary of his/her qualifications to the court after being sworn in;

The duties and responsibilities of the expert witness in civil cases were set out in *National Justice Compania Naviera SA v Prudential Assurance Company Limited* by Mr Justice Cresswell and may be taken into account for criminal cases as well (Sutherland, 2009:2-4):

1. The expert evidence provided must be independent and uninfluenced by outside entities. For example, the expert witness must not have been previously hired by either party before the trial commenced;
2. The expert witness should only furnish the court with the necessary information and not advocate for either side;
3. The expert witness should express opinion backed by fact and consider all relevant information;
4. The expert witness should plainly state if he/she cannot answer a question due to it not being within his field;
5. The expert witness must state that the information contained in her/his report is the truth, the whole truth and nothing but the truth. He/she must also state if her/his opinion is not researched thoroughly due to inadequate data available;
6. If the expert witness experiences a change of mind or view with regard to her/his opinion for whatever reason, the court should be notified immediately;
7. If the expert witness makes use of photographs, surveys, calculations, analyses, measurement reports or similar documents as evidence, this evidence must be provided to the other party along with the report.

Van der Hoven (2006:168-169) is in agreement with the duties and responsibilities set out above by stating that presiding officers often lose confidence in experts whose reports are not properly researched or objective. The author also points out that an expert should not exceed the limitations of her/his field and must remain as unbiased as possible.

Meintjes-Van der Walt (2000:60-62) purports that, as long as expert evidence is utilised in courts, there will be paradoxes and dilemmas involved and she gives various reasons for this. Firstly, the court utilises scientific evidence in order to be certain of its decision-making process however there are no certainties in science itself. Secondly, if the court requires an expert to explain concepts that are beyond its knowledge then, for the same reason, the court cannot be in a position to evaluate the opinion to make an informed decision. This may be further complicated by the fact that more than one, perhaps contradicting, experts may give testimony. Thirdly, cross-examination of a witness allows lawyers to expose potential flimsiness in a witness's case. If the lawyer himself/herself does not understand the terminology

used by an expert witness, it makes a fair cross-examination more difficult. Finally, even though an expert witness is supposed to give testimony independently and free from bias, he/she may be perceived to be associated with either the prosecution or the defence. Meintjes-Van der Walt (2000:60-62) makes the observation that perhaps the South African legal system is not adapted to deal with the abovementioned dilemmas and paradoxes surrounding expert witness testimony. She challenges the courts to formulate a test that will allow valid expert evidence and disregard irrelevant expert evidence.

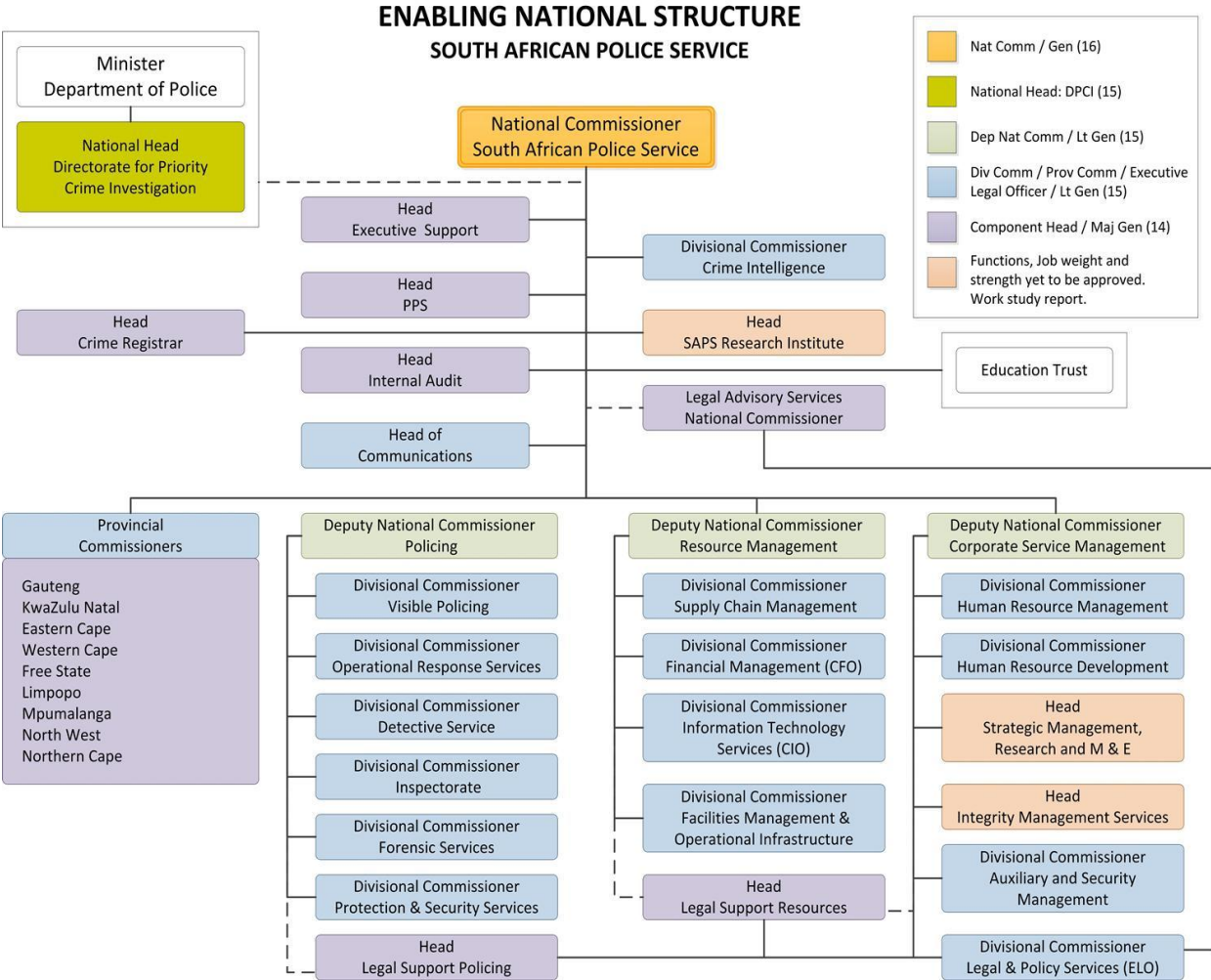
2.5 CRIME SCENE INVESTIGATION AND POLICE PROCEDURE

The South African Police Service has been through many restructuring undertakings. In 2000, the National Commissioner of the SAPS at that time, Jackie Selebi, developed a strategic plan for his term which culminated in the consolidation of specialised police units. His 'key strategic priorities' were to form the Organised Crime Unit (OCU), the Serious and Violent Crime (SVC) Unit and the Commercial Crime Unit (CCU). As a result, many specialised police units such as the Anti-Corruption Unit, the South African Narcotics Bureau (SANAB) and the Murder and Robbery Units (which handled serial murder investigations prior to the creation of the IPS) were closed. Murder and Robbery Units were integrated into the SVC Unit and SANAB was integrated into the OCU, all in the interest of promoting visible policing to the detriment of crime intelligence and the Detective Service (Burger, 2014:1).

In 2006, Selebi again restructured the SAPS; his reasoning was that, since most crimes are reported at station level, all resources should be concentrated there. As a direct result of this, the SVC Units (which took over serial murder investigations from the Murder and Robbery Units) were decentralised to 169 local stations that had a high incidence of violent crime. The Family Violence, Child Protection and Sexual Offences Unit (FCS) was also decentralised and these members were redistributed to some, not all, local stations (Burger, 2014:2). The author also notes that specialist investigators have gained their expertise through many years of experience and built networks from which to draw support when investigating a crime. By dispersing these specialists and assigning more general crime dockets to them, their networks fall away and their expertise is unutilised. For example, specialist investigators build an

informant network over the years, which can keep them updated on the changing *modi operandi* of certain criminals or on the movements of syndicates. Within a consolidated specialised unit, specialist investigators can ask advice of their colleagues regarding a case immediately as well as be able to train younger members on their methods, so the expertise is never lost. As it stands, the national structure of the SAPS is illustrated by Figure 1 (SAPS, 2014a).

Figure 1: Organisational structure of the SAPS



Source: SAPS Organisational Structure, 2014.

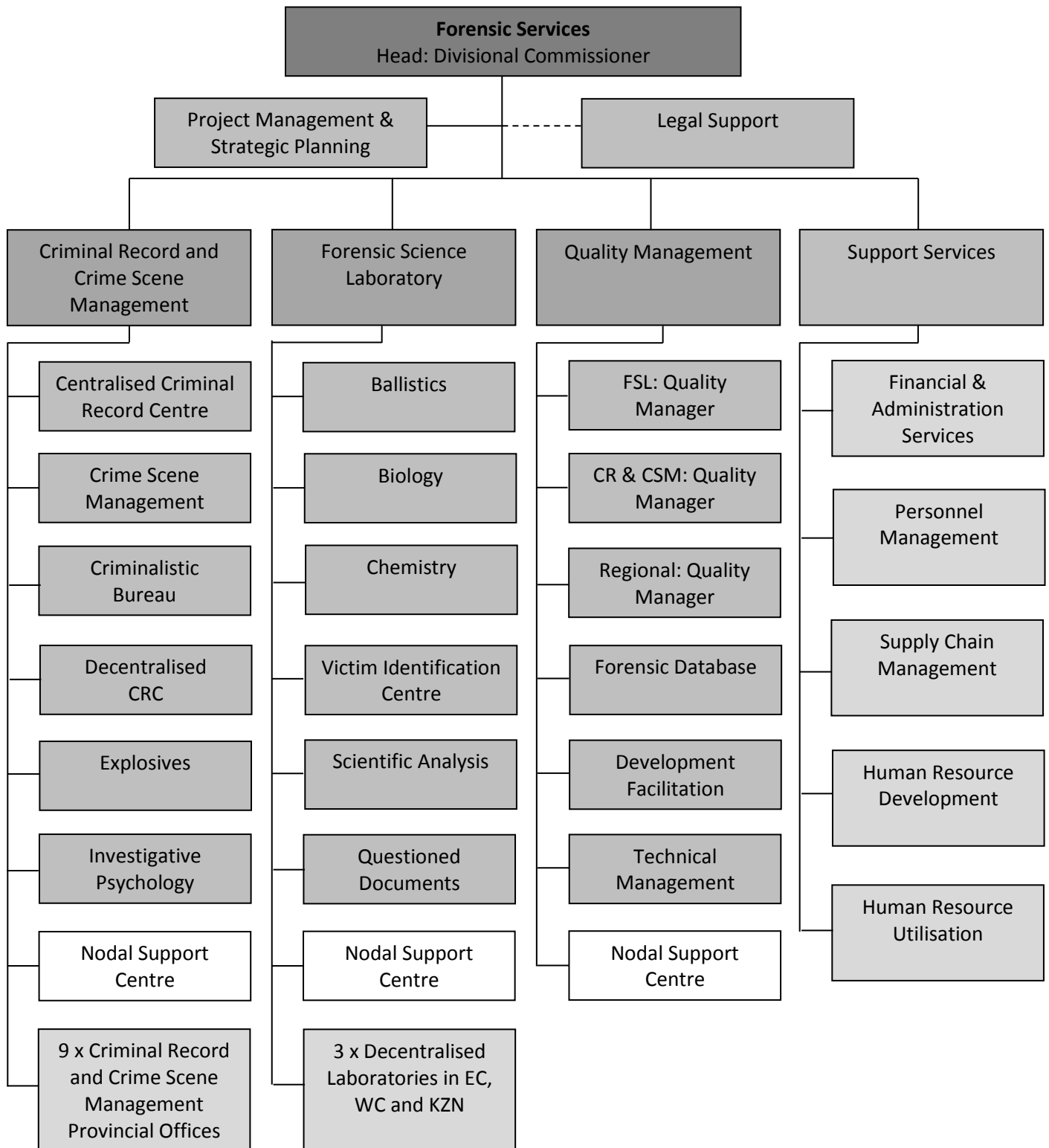
The Forensic Services Division of the SAPS was previously known as the Criminal Record and Forensic Science Services (CRFSS) which was established in 2005 after it became its own division, separate from the Detective Service. This division aims to provide an integrated approach to the analysis of evidence as well as the presentation of expert testimony in courts (Omar, 2008:29). The Forensic Services

Division has three main subsections, namely, Criminal Record and Crime Scene Management, the Forensic Science Laboratory (FSL), and Quality Management, as indicated in Figure 2. The function of the Criminal Record Centre (CRC) is to identify and confirm previous convictions of suspects in crimes being investigated by the SAPS. As the Forensic Services Division plays an integral role in investigations with regard to the crime scene and in court, the operational functionalities of the Forensic Services Division include (Government Communications and Information Services (GCIS), 2015:320):

- Criminal record and crime scene management which focuses on crime scene management and processing, forensic analysis and the preservation of criminal records;
- Forensic laboratory which concentrates on examining and analysing forensic evidence;
- Quality management that has at its core quality assurance and enhancing performance.

The Forensic Sciences Laboratory of the SAPS was established in January 1971 and consisted of Biology, Chemistry and Electronics Units. In 1987, the Ballistics and Questioned Document Unit were incorporated into the FSL. The Explosive Investigation Unit also amalgamated with the FSL in early 2000. The main laboratory is located in Pretoria, with decentralised offices in Cape Town, Port Elizabeth and Durban. The main focus of the FSL is to apply scientific methods to an investigation. Science, as a method in itself, is objective and the FSL strives to adhere to this and not only brings offenders to justice but prevents innocent people from being wrongly convicted of a crime through crime scene examination and physical evidence analysis. The Biology Section of the FSL manages the DNA Database and examines questioned DNA samples sent in by departments within the SAPS. The Ballistics Section employs the Integrated Ballistics Identification System (SAPS, 2014b). Figure 2 illustrates the organisational structure of the Forensic Services Division of the SAPS.

Figure 2: Structure of the SAPS Forensic Services Division



Source: Adapted from Marais (2014) *Organisational Structure: Division: Forensic Services*.

A brief summary of the Sections that fall under the FSL and their main purposes follow (SAPS, 2014b):

1. Ballistics Section – Examination of firearm-related crimes and crime scenes.
2. Scientific Analysis Section – Examination of organic and inorganic materials (including electronics).
3. Questioned Document Section – Examination of handwriting and document-based crimes.
4. Biology Section – Examination of DNA, trichology (hair analysis) as well as crime scene investigation and support.
5. Chemistry Section – Examination of substances (e.g. drugs or poisons) and drug-related crime scenes.
6. Explosives Section – Examination of explosives-related incidents, arson investigations and management of the SAPS bomb disposal ability.

The purpose of any investigation is to determine what actually happened and who is responsible, and to identify the sequence of actions. This can be done by means of evidence which can be collected using scientific techniques or approaches (Zinn & Dintwe, 2015:11-12). Actions taken at the beginning of a crime scene investigation and the management thereof can play a crucial role in solving the case. Management of a crime scene involves the careful and thorough collection and preservation of physical evidence that will later be used in court (Omar, 2009:59). When a crime is reported to the police, the call taker/dispatcher must be able to firstly, enter the information given by the caller into the SAPS computer system and, secondly, dispatch a police officer to the scene to monitor, secure and control the situation and make arrests, if necessary. This 'first member' on the scene is also responsible for keeping an access log to the crime scene, a casualty log of victims transported to the hospital/morgue, an exhibit log of evidence removed from the scene and a 'first member report' which describes the events that occurred from the time he/she arrived at the scene. This is to be handed over to the crime scene manager (Omar, 2009:63-64).

Ideally, once an investigating officer has been identified by the crime scene manager and relevant Forensic Services Division members are on the scene, they will all have a planning session to work out an outcome-based method of investigation. The 'first

walkthrough' of the scene may be done to determine the *modus operandi* of the crime as well as to identify evidence to be collected and processed. Thereafter, the investigating officer/crime scene manager will establish the manner and order of resources to be used to investigate the crime. He/she will also assign the level of priority the case will receive (Omar, 2009:65).

The 'golden rules' of crime scene management are: to never touch anything, never change anything and never remove or add anything. These rules ensure the integrity of a crime scene until the evidence is identified, measured, photographed and documented. An effective investigator will be familiar with the Locard and Lochner principles as well as the concept of chain of evidence/continuity of possession. Locard's exchange principle is based on the contact theory, which asserts that, when two objects come into contact with each other, one will leave a trace on the other. In other words, when an offender commits a crime, he/she will leave evidence at the crime scene and also take trace evidence from the crime scene with him/her. Lochner's principle is supplementary to Locard's exchange principle and affords the possibility to detect non-visible electronic traces. For example, in the case of a cell phone handset, there is non-visible contact between the cell phone and the crime scene, but the locational contact is recorded by the computer system of the cell phone network provider (which is not at the crime scene). Chain of evidence/continuity of possession is a chronological history of the evidence from the time the evidence is found, documented and collected at a crime scene and then stored, packaged, transported and analysed until it is presented in court without any changes. The investigator must be able to prove that the chain of evidence has been maintained and the integrity of the evidence has not been compromised and, in this way, substantiate the evidence (Lochner & Zinn, 2015:10-14).

A serial murder case, if determined at the crime scene, will receive a high level of priority. Within the SAPS, the Forensic Services Division encompasses a subsection called Crime Scene Management. Members from this Division aid the investigating officer with the management of a crime scene, by collecting and transporting evidence to be processed by the relevant Section in Forensic Services. They also take part in the planning session and lead the investigating officer with regard to collection and processing of evidence (Respondent 8, 2015). The Crime Scene

Management member is tasked with (but not limited to) the following (Omar, 2009:66):

- To photograph the crime scene before any evidence is removed to be processed;
- To ensure that a log of the chain of custody with regard to evidence is kept;
- To collect evidence such as trace or DNA evidence;
- To gather information to perform a reconstruction of the crime scene;
- To coordinate with the pathologist to arrange removal of a body from a crime scene, if necessary;
- If a suspect was arrested, to collect DNA samples from the him/her for later comparison to unknown samples;
- To preserve evidence and transport it to the relevant Forensic Science Laboratory Section for processing.

The Crime Scene Management member may aid with the collection and processing of evidence from the crime scene, but the crime scene manager is responsible for the final survey of the crime scene and debriefing of all the members present at the scene, as well as collecting their DNA samples (if necessary) for elimination purposes. An investigation diary must be kept of the case documenting activity during every stage of the investigation. The crime scene manager will then be accountable for restoring the crime scene, ensuring the return of all equipment used and releasing the crime scene to the owner of the premises. The last stage of crime scene management is to evaluate the process followed at the crime scene and to assess if improvements can be made (Omar, 2009:67).

Once the crime scene investigation phase has been completed, the investigation phase of the crime begins. A case docket must be opened by the investigating officer and registered in the Crime Register or on the Crime Administration System (CAS). The case docket is separated into three sections to make for easy access. Section A contains evidence related to the case, i.e. witness statements, search warrants, forensic reports, photographs, post-mortem reports, etc. Section B comprises administrative documents and correspondence regarding the crime. Investigation diary details are filed under Section C and include the first member report, details of

the crime scene such as *modus operandi* and victim and suspect details. After registration, the case docket must be forwarded to the Crime Office and the Crime Office Commander or Detective Commander must acknowledge receipt of this transfer by signing for the case docket. The Crime Office Commander or Detective Commander will then assign the case to a detective.

This will be either the detective who attended the scene or another detective depending on various factors, including experience or number of cases. In complex cases, a team of detectives may be assigned to a single case. The investigating officer (detective) then commences with his/her investigation of the crime by collecting information on the crime, following up with witnesses and receiving feedback from forensic sections regarding physical evidence. If a suspect has been identified and arrested, the case docket is sent to a senior public prosecutor who will review the docket and make a decision whether to prosecute or not. There is no strict time limit on sending the case docket to the prosecutor as each case is forwarded depending on its own merits (Omar, 2009:69-70). The investigation process ends when the evidence, in the form of testimony or physical evidence, is presented in court and the court accepts or rejects it (Zinn & Dintwe, 2015:23).

In the USA, the Crime Scene Investigator (CSI) plays an important role in the investigation of a crime. Role players also include the lead detective, the medical examiner, the prosecutor's office and the forensic scientists at the crime laboratory. The CSI's role is similar to that of the SAPS Crime Scene Management member, in that he/she identifies, documents, collects and preserves physical evidence at the crime scene. The CSI needs to be objective and unbiased with regard to processing a crime scene as the physical evidence will need to be accepted by a court during the trial (Fish, Miller & Braswell, 2011:1-3). Every crime scene is unique, but in order to ensure the integrity of the crime scene, many US law enforcement agencies have adopted the 12-step process developed by the Federal Bureau of Investigation (FBI). The aim of this process is to gather and protect evidence at a crime scene and is applicable to all types of investigations, including serial murder crime scenes. The 12 steps are as follows (Fish et al, 2011:32-33):

1. Prepare;
2. Approach scene;

3. Secure and protect the scene;
4. Initiate preliminary survey;
5. Evaluate physical evidence possibilities;
6. Prepare narrative descriptions;
7. Photograph the crime scene;
8. Prepare diagrams and sketches of the scene;
9. Conduct a detailed search;
10. Record and collect physical evidence;
11. Conduct a final survey; and
12. Release the scene.

Even with a standing operating procedure in place for the investigation of crime scenes as well as similar steps to follow when collecting evidence at a crime scene, the SAPS still faces challenges with regard to implementation of the procedures. Constitutionally mandated by the National Assembly, the Portfolio Committee on Police reviews the Department of Police and its performance during the financial year. According to Mbadlanyana (2014:1), the Committee ensures that:

the SAPS provides high quality services, economical in nature, efficiently and effectively; services are rendered in line with the SAPS' constitutional mandate, strategic plans and budgets; that services contribute meaningfully to the realization of government's overall objectives; and that the Portfolio Committee assesses how the Department might improve on its performance.

The SAPS Annual Report for 2015/2016 recorded the performance of the Detective Service Programme for the 2015/2016 financial year and found that the SAPS failed to meet their targets for the reduction of serious crimes and contact crimes. Table 1 below indicates the details of their sub-optimal operation (SAPS, 2016a:162-167):

Table 1: Targets not achieved by the Detective Service in 2015/2016

Performance Indicator	Target 2015/16	Actual achieved 2015/16	Comment
Detection rate for serious crime	41.05% (858 834)	36.90% (805 158 from a total of 2 182 144)	Target not achieved
Detection rate for contact crimes	58.95% (436 744)	53.09% (417 390 from a total of 786 142)	Target not achieved
Detection rate for crimes against women (18 years and above).	75.42% (298 692)	73.54% (146 216 from a total of 198 815)	Target not achieved
Detection rate for crimes against children (under 18 years).	70% (74 974)	68.71% (35 497 from a total of 51 659)	Target not achieved
Percentage of case exhibits (entries) processed within 28 working days	93% of case exhibits (entries) processed by FSL within 28 working days	70.61% (146 555 from a total of 207 568)	Target not achieved

Source: SAPS (2016:162-167).

The detection rate of a crime is determined by the process that SAPS employs from the time the SAPS becomes aware of the crime and opens a case docket until such time that the suspect is arrested and charged (SAPS, 2016a:169-170). Besides the abovementioned challenges, the SAPS has many other problems. Govender (2011:126-127) outlines the problems experienced by detectives specifically at the Rustenburg Detective Unit, however, these problems could be experienced by many other similar units and are as follows:

- Processing raw crime information into actionable investigation tools;
- Off-line computer systems delaying investigations;
- Detectives do not have access to their own Crime Information Analysis system;
- Informants' information is not always correct;
- Information is not recorded properly on the computer system;
- Data integrity problems are created by a sluggish turnaround time between data collection and data entry;

- Reliable, valid and timely crime information is mostly not available for analysis;
- Detectives do not use crime information products to aid their investigations mainly because these products are not readily available for them to use or they do not know how to use them;
- There is a lack of knowledge and dissemination about the types of crime information products available to investigators and feedback on their use.

Crime information products are sources of data that can aid the investigation of a crime and include case docket analysis, activity flow charts, tables, matrices, collection plans, criminal profile, assessments, analytical briefings, pin maps, crime analysis, linkage analysis, association analysis, criminal investigative analysis, statistical analysis, pie charts, composite tables, automated mapping, geographic flow mapping, target profiling, offender movement pattern analysis and forecasting. Crime information products can also be used for strategic and tactical purposes. When a crime is committed, using any and all information available to be collected can increase the possibility of the case being solved (Govender, 2011:121-124). Govender's (2011:127) secondary findings explain possible reasons for the problems experienced by the detectives:

- A lack of adequate/needs-specific training in the processing and utilisation of crime information products;
- The fear experienced by witnesses of their aggressor as well as the fear and intimidation experienced by the detectives which is caused by the criminals;
- Resource limitations which include personnel shortages as well as access to hardware or software with regard to certain crime information products.

2.6 CASE LINKAGE

The analysis of case linkages are an important part of crime intelligence. The more information an investigator has, the easier it becomes for him/her to make inferences regarding the crime scene and the suspect (Horne, 2009:68). Hazelwood and Warren (2004:307) refer to case linkage as "linkage analysis" which is a process of behavioural analysis that is used to determine if a series of crimes are committed by the same offender. The authors take into account *modus operandi*, ritual and

signature aspects of the crime(s) and the offender. Thereafter, five assessment procedures are followed (Hazelwood & Warren, 2004:307-308):

1. Gather data from many sources;
2. Assess the data and identify significant features of each crime throughout the series;
3. Categorise the significant features as either MO or ritualistic;
4. Compare the combination of MO and/or ritual across the crime series to establish whether a signature exists;
5. Assemble a written report containing the findings.

A study undertaken by Morton, Tillman and Gaines in 2014 for the FBI, entitled “Serial Murder: Pathways for Investigations”, echoes the importance for case linkage to be involved when identifying a serial murderer. It focuses mainly on the victims’ bodies in terms of how and where they were found and, in turn, what that says about the offender. The study bases case linkage on the following factors being consistent and/or similar (Morton et al, 2014:10):

- *Modus Operandi*;
- Choice of victim;
- Approaches to victims;
- Physical or sexual interactions;
- Use of weapons;
- Cause of death;
- Forensic results;
- Geographic locations of the murders;
- Temporal aspects (time of day/week/year).

Case linkage relies on two important underlying assumptions which are consistency and variability. Consistency is associated with the belief that offenders will display consistent behaviour across crime scenes, and variability relates to the belief that there will be adequate variation in the behaviours of different offenders in order to distinguish between them at crime scenes (Zinn & Dintwe, 2015:291). The linking of cases allows law enforcement agencies to investigate serial murder more practically

as resources can be deployed and utilised more effectively. This can be achieved in three ways (Woodhams, Hollin & Bull, 2007b:234):

1. Linking serial crimes may increase the amount of evidence against the offender;
2. The series of crimes can be investigated together by one investigator, rather than each crime being investigated separately by different investigators, which makes more investigators available to attend to other cases;
3. Similar fact evidence can be presented in court against the offender, especially if there is a lack of physical evidence or witnesses.

The term 'case linkage', as used in this research study, is employed to explain the methods used to link a series of murders as being perpetrated by a single offender. These methods can include MO, signature, forensic evidence, behavioural analysis/profiling and any other means used to link the murder series (the crime scenes to each other as well as to the offender). The IPS uses the term 'linkage analysis' to describe the behavioural analysis procedure (which does not include forensic evidence) that it conducts to aid in the investigation of a serial case.

Thus, this research study defines case linkage based on, but not limited to, the definition mentioned by Morton et al (2014) in the study called "Serial Murder: Pathways for Investigations" rather than on Hazelwood and Warren's (2004:307) definition, which is similar to the definition of linkage analysis used by the IPS. The definition of case linkage used in this study also includes forensic examinations as well as further case linkage methods that can be used during the trial and sentencing of an offender in court. Explanations of various methods of case linkage will be given in Chapter 3.

2.7 LINKAGE BLINDNESS

There is a debate amongst researchers about whether the incidence of serial murder has increased or remained constant over the years. Some claim that there is a 'hidden' figure when it comes to serial murder which can be attributed to 'linkage blindness' (Labuschagne, 2000:24). Linkage blindness is a term coined in 1984 by Steven A. Egger, an American criminal justice expert and specialist on the subject of

serial murder, who defines it as “the lack of sharing or coordination of investigative information relating to unsolved murders and the lack of adequate networking among law enforcement agencies” (Egger, 1985:v).

In his research, Egger (2002:257) deemed linkage blindness as the crux of the law enforcement problem which gives serial murderers an advantage. He cites the Ted Bundy serial murder case as an example of linkage blindness by law enforcement (Egger, 2002:8). Many of Bundy’s victims were reported missing, but the police failed to file one such report and missed the link. It was not until a missing persons report of a fourth victim was filed, that the link between the murders was established and a task force was created. However, this task force was a delayed response and had limited ability to cross-reference information. A second example Egger mentioned was the John Wayne Gacy case (Egger, 2002:9) where the suspect was already in police custody when bodies were found. He was connected to four separate murders but the association was not made as computer case files were not centralised and could not be accessed.

Egger (2002:70) concedes that the problem of linkage blindness is not unique to the USA. Hodgskiss (2004:74), who authored an article titled “Lessons from Serial Murder in South Africa”, agrees with Egger and asserts that the problem of linkage blindness (the failure to attribute a series of crimes to one offender), is prevalent in South Africa as well. He refers to a case in the 1980s where many bodies were discovered in an urban area and, of the victims identified, only one victim was reported missing. A thorough investigation was only launched after four bodies were found.

Between April and December 2005, serial murderer and rapist, Jimmy Maketta, terrorised the residents of the Philippi farming area of the Cape Flats. After the initial examination by the first investigators stationed at Philippi police station, the wrong person was arrested. In December 2005, the investigation was taken over by Capt. Morris of the Serious and Violent Crime (SVC) Unit who re-interviewed witnesses and revisited the crime scenes where he found crucial evidence that had been overlooked the first time (SAPA, 2007). This is an example of how divisions and/or stations working together, rather than separately, could have led to an earlier apprehension of

Jimmy Maketta. Having an experienced investigator, trained to investigate this type of crime, on the initial team could possibly have meant that valuable information would not have been missed and leads could have been followed up sooner.

In March 2013, police found the skeletal remains of a female and a green dress under a swimming pool in the East Rand. Questions were posed by the media as to whether these remains were connected to a prior serial murder case involving a suspected serial killer in the 1980s, Gert van Rooyen, who committed suicide before he could be arrested by police. Without an identification of the victim, this would be nearly impossible to confirm or deny. Capt. Mike van Aardt was queried about the victim's identity and he responded: "The problem is that back then we didn't have a proper missing persons' bureau and police stations didn't really co-ordinate with one another, so this case is like searching for a needle in a haystack" (IOL News, 2013). Coordination between divisions here could have either pointed to or ruled out Gert van Rooyen as the perpetrator in this case. But the lack thereof left the question unanswered and the investigation incomplete.

It is alleged that Stewart 'Boetie Boer' Wilken, the Port Elizabeth serial murderer, started murdering victims in February 1990. By 1997, he had killed at least eight people but no connection had been made between the murders. It was only in January 1997, when a boy called Henry Bakers went missing that police suspected Stewart Wilken was connected to his disappearance. It was not long into his questioning that Wilken confessed to these murders as well as others, including the murder of his own daughter (Strohm, 2012:1). Even though Wilken did not target the same type of victim every time, perhaps a centralised database into which all the information of every crime was entered could have facilitated the investigation by identifying a common pattern, signature or *modus operandi* and identified a murder series earlier. The abovementioned case examples imply the evidence of linkage blindness in serial murder investigations in South Africa.

Due to the stranger-on-stranger nature of serial murder, this type of crime instils deep-seated fear in communities (Snyman, 1992:35). The SAPS have always and will always be under scrutiny in terms of successes, failures and performance measurement (Leggett, 2003:2). In order to compile a case linkage analysis, a large

amount of information is needed and the information has to be accessible. This presents a problem for law enforcement in the form of linkage blindness as the sharing of information is not practiced regularly but is key to a serial murder investigation. The exchange of information relevant to the investigation is lacking and, as a result, links between similar crime patterns, *modi operandi*, signatures and geographical patterns may be missed.

The issue of linkage blindness restricts law enforcement in terms of investigating a case of serial murder (Hodgskiss, 2004:69). It must be remembered, however, that police are not in control of what crimes the public report, but if the criminal justice system appears to be working correctly, people may become more inclined to report a crime (Leggett, 2003). According to Hodgskiss (2004:74-76), the following social factors in South Africa affect serial murder investigations:

1. The relationship between the population and the police is prejudicial and the community does not readily communicate with the police to aid investigations (However, Hodgskiss does state that, in a personal communication to him by Labuschagne in 2002, many serial murder cases were solved with the help of informants).
2. The South African population is highly mobile, with numerous migrant workers. Within the anonymous township populace, it is often the case that no one notices when someone goes missing. This hampers investigations in that time is wasted and important leads become futile after such a long time. Some victims are in such a state of decomposition that it becomes impossible to identify them.
3. Poverty allows a serial murderer to lure victims more easily, usually under the guise of offering them employment. People who are living in state of poverty sometimes turn to high-risk ways of making a living, for example, prostitution.

Egger (2002:242-243) states that the reasons for linkage blindness within law enforcement are varied and include the following:

- Lack of sharing of information;
- Inter-agency rivalry;
- Budgetary considerations;

- Loss of policy direction;
- Issue of accountability;
- Lack of consensus regarding strategies;
- Individual self-worth of personnel;
- Coordinating investigative functions and actions; and
- Managing large amounts of information.

Bailey (1995:712-713) asserts that the critical problem of serial murder investigations is the lack of information which is necessary to establish if a homicide forms part of a murder series or not, to determine MO patterns, as well as to examine physical evidence from an identified murder series. In order to gain access to this information, it sometimes becomes necessary for law enforcement agencies and their investigators to liaise with other agencies. However, the lack of inter-jurisdictional cooperation results in linkage blindness because the information is not shared between the agencies. This issue is further elaborated upon from a South African perspective in Chapter 4.

O'Connor (2012:2) believes that the reasons for linkage blindness are that, firstly, a law enforcement agency might not want to admit to the existence of a serial murderer in its jurisdiction as it infers that it cannot protect its citizens and, secondly, police may not even believe case linkage is possible or that it is useful to them. On the other hand, Bailey (1995:713) states that the cause of linkage blindness is due to law enforcement agencies in the USA being extremely decentralised and fragmented. The author is of the opinion that directing funds towards research on the phenomenon of serial murder as well as increasing cooperation and communication in law enforcement will lead to better strategies for combating the occurrence of serial murder. Grant and Terry (2005:347) are of the opinion that 21st century technology developments will play a role in reducing linkage blindness. For example, increased internet capabilities will facilitate inter-agency information exchange, which will, in turn, reduce linkage blindness.

2.8 CONCLUSION

Having clear concepts that have been meticulously defined are necessary to build a theory or support an argument (De Vos et al, 2005:32). The impact of the restructuring of the SAPS in 2000 and 2006 directly affected the manner in which serial murder investigations were performed and by which unit within the SAPS. Violent crimes, such as serial murder require that investigators are able to analyse crime scenes for evidence, MO and/or signature. When a serial murder case goes to trial, the expert witness plays a critical role. Understanding the meanings of the abovementioned concepts and applying their principles correctly could only strengthen an investigation and the impact of the evidence given in court. Knowledge of these concepts should be kept in mind for the following chapter which gives a background and literature review of the subject of serial murder and case linkage methods.

CHAPTER 3: BACKGROUND AND LITERATURE REVIEW

“There is no single identifiable cause or factor that leads to the development of a serial killer. Rather, there are a multitude of factors that contribute to their development. The most significant factor is the serial killer’s personal decision in choosing to pursue their crimes” (FBI Symposium, 2005:11).

3.1 INTRODUCTION

South Africa has one of the highest homicide rates in the world which is approximately five times higher than the global average. The last study done on global homicide was conducted by the United Nations Office on Drugs and Crime (UNODC) in 2013 and asserts the global average homicide rate as 6.2 per 100 000 of the population (United Nations Office on Drugs and Crime (UNODC), 2013:14). South Africa’s homicide rate is currently exceptionally high at 33.9 per 100 000 of the population according to the SAPS Annual Report for 2015/2016 (SAPS, 2016b:12).

The size of a police force has no direct impact on the closure of cases, as was demonstrated in the global study on homicide conducted by the United Nations Office on Drugs and Crime (UNODC) (2013:95). Many countries with high homicide rates actually have a greater ratio of police to the population, but they still have low homicide clearance rates. However, the availability and use of resources of the police must be taken into account. The SAPS, whose substantially constrained resources affect the ability to solve crime and result in low case closure rates, is one such example. As a result, some of these homicides develop into murder series, which place a further strain on an already pressurised law enforcement agency (Salfati, Labuschagne, Horning, Sorochinski & De Wet, 2014b:1).

Hodgskiss (2009:84) claims that 72 percent of recorded serial murder cases in South Africa occurred post-1990, with a sharp rise between 1990 and 1994. The UNODC (2013:14) corroborates this statement in its report which affirms that post-apartheid (1990-1996) serial murder rates increased by almost 900 percent above the average

annual rate. However, the homicide rate itself decreased steadily between 1995 and 2011 by more than 50 percent. The percentage quoted by Hodgskiss (2009:84) may be attributed to the SAPS becoming more efficient in identifying serial murderers operating in the country. In South Africa, cases can be linked in various ways. A few examples include the following: a detective could notice a similarity in the *modi operandi* of cases he/she is investigating; an Integrated Ballistics Identification System (IBIS) 'hit' could be made, a DNA match could be identified, an Automated Fingerprint Identification System (AFIS) connection could be established, as well as similar bite marks, fibres or shoe imprints being found at different crime scenes (Labuschagne, 2006:184).

3.2 SERIAL MURDER IN SOUTH AFRICA

There have been few studies done in South Africa that aimed to link crimes as part of a single murder series based on identifying the significant behaviours of serial murderers. The need exists for further research-based support for the use of linkage analysis (the term as used by the IPS, where no forensic evidence is present) as evidence in court. Most of the studies that exist were undertaken in the Western world and none took into account cultural influences, such as those in South Africa, which can affect behaviours. In South Africa, an average of five new murder series occurs every year. Additionally, the average number of murders in a series is nine, which is much higher than what is found in the USA and other Western countries (Labuschagne & Salfati, 2015:4).

In 2014, the IPS of the SAPS and the Investigative Psychology Research Unit at John Jay College of Criminal Justice in New York undertook a collaborative study on serial murder in South Africa, which included a United States comparison component. To date, it is the largest empirical international study on serial murder which uses original police case files and the Homicide Profiling Index (a validated data collection tool). By 2007, 131 murder series were identified in South Africa, the earliest recorded in 1936, with the majority of cases identified since 1990. Ninety-seven (74%) of these cases were solved. The study conducted consisted of 33 of the 53 murder series identified between 1953 and 1997 and the research was composed of separate articles with regard to different components such as victim-offender

interaction, victim type, planning, violent behaviour, crime scene actions, consistency and demographics (Labuschagne & Salfati, 2015:4-6).

A component of the study undertaken by Salfati, Horning, Sorochinski and Labuschagne (2014a:1) used a sample of serial murders from South Africa and consisted of 30 offenders with a total of 283 victims and 235 crime scenes, with the goal of establishing how consistently an offender displays the same or similar behaviours across their series. This component study took into account findings made by Sorochinski and Salfati (2010:109-136) during their study entitled “The Consistency of Inconsistency in Serial Homicide: Patterns of Behavioural Change across Series”. The study found that the behaviours that influence each homicide in a series can be divided into three subgroups: victim-offender interaction, planning and violence.

Canter (2000, in Salfati et al, 2014a:4) contends that the interaction between the offender and the victim is dependent on the role which the offender allocates to the victim. He offers three possible roles:

1. The victim as an object: where the victim is just something to be used and controlled like an inanimate object;
2. The victim as a vehicle: where the offender uses the victim as a vehicle for the offender’s own emotional state (the victim may be subjected to extreme violence in this case); and
3. The victim as a person: where the victim has personal significance to the offender.

When this model was applied to the component study conducted by Salfati et al (2014a:4), 85.7 percent of the incidents of the sample were categorised as corresponding to either the victim as an object or the victim as a vehicle themes. This finding could be vital in understanding motivations for serial murder in South Africa. Although a higher percentage corresponded to the victim as a vehicle theme, the offenders who used the victim as an object theme from the beginning of the series were less likely to change their pattern.

In terms of planning behaviour demonstrated by the serial offender, the amount of pre-offence planning and post-offence planning was in question. Pre-offence planning is practiced by the offender in preparation for the crime to be successfully committed. Post-offence planning involves those actions needed to be taken after the crime has been committed in order to evade detection. In the USA, offenders tend to change their planning strategy from the first to the second crime, which supports the theory that behaviour can change as the offender learns from experiences. The classification study conducted by Salfati et al (2014a) showed that South African offenders mostly do not exercise post-offence planning, whereas the USA sample did. The reason for this appears to be because South African offenders plan for post-crime outcomes before the crime is committed. For example, the South African serial offender will lure the victim to a secluded area and then commit the murder because this reduces the risks taken by the offender if he had to dispose of a dead body after committing the crime elsewhere. The component study concluded that the difference in planning strategies between South African and USA serial murderers is due to environmental constraints and specifics surrounding the crime (Salfati et al, 2014a:5).

Sorochinski and Salfati's (2010:124) study looked at cognitive types of violence and categorised them into two separate styles:

- Process-oriented – whereby the offender may enact an extensive amount of violence against the victim that results in a slow death for the victim;
- Goal-oriented – whereby the offender exerts more control in terms of violence exhibited and the goal is the act of killing itself.

Situational factors, unexpected circumstances and/or a loss of control by the offender may influence a change of behaviour within this subgroup. Since control over these external factors is uncertain, Sorochinski and Salfati (2010:127) found that this subgroup had the least consistency, with offenders more likely to change over to process-oriented from goal-oriented than vice versa.

The results yielded by the consistency in victim selection study (Salfati et al, 2014a:13) showed that over 50 percent of offenders consistently used approaches that fulfilled the requirements for victim as an object/victim as a vehicle dichotomy

across the first three crime scenes in a series. The victim as a vehicle approach was more consistent overall, but as the series progressed, the consistency of the use of this approach decreased. Vulnerable victims were a consistent target for offenders at the beginning of the series but, as the series moved forward, there was a major decrease in obtaining vulnerable victims. A reason for this could be that as the offender gets bolder with further murders, he expands his range for victim selection.

Overall, with regard to consistency of an offender's crime scene actions across a series, the component study (Salfati et al, 2014a:19) found that violence, as a behavioural subgroup, was the least consistent for all offenders and the planning behavioural subgroup was the most consistent. The same findings were made regarding USA offenders, with South African offenders being less consistent in both subgroups to some degree.

“Research generally supports the view that higher level of behavioural similarity will exist across crimes committed by the same offender (indicating behavioural stability) compared to crimes committed by different offenders (indicating behavioural distinctiveness) and this is typically interpreted as evidence that it should be possible to link serial crimes with a reasonable degree of accuracy” (Bennell, Gauthier, Gauthier, Melnyk & Musolino, 2010:85-86).

However, various factors have the ability to potentially influence the degree of linking accuracy and include: the type of crime scene behaviour in question, the experience level of the offender, and the time period over which crimes have been committed (Bennell et al, 2010:86).

Other problems that can affect the accuracy of research on linking ability may include (Bennell et al, 2010:90):

1. A reliance on solved cases as the data collection pool. A possible reason for the cases having been solved in the first place could be due to the high level of behavioural stability and distinctiveness (the exact thing being tested for, so the results will always prove the questioned theory);

2. Reliance of victim statements as a source of data. Victims may suffer from memory loss, or not be able to recall an incident with accuracy due to the trauma they have suffered. Details could differ if many different law enforcement officers take the statements;
3. Data degradation; and
4. Small sample sizes.

A further component study conducted by Salfati, Labuschagne, Horning, Sorochinski and De Wet (2014b:20), which included a comparison with the USA, also found that South African serial murder offenders and victims were similar to those of their USA counterparts on many aspects including:

- Offender’s age – late twenties to early thirties;
- Offender’s marital status – most offenders were involved in a romantic relationship at the time of committing the murders;
- Offender’s criminal history – offenders possessed a prior criminal history; and
- Victim-offender relationship – in the majority of cases, the offender was a stranger to the victim.

There were salient differences though, which are tabulated below (Salfati et al, 2014b:20).

Table 2: Salient differences between South African and United States of America serial homicide offenders with regard to demographics and crime scene actions

South Africa	United States of America
Only male serial murderers	Presence of female serial murderers
Less educated	More educated
Predominantly black offenders and victims	Predominantly white offenders and victims
Majority of the crimes occurred outside (fields, bushes, plantations)	Majority of the crimes occurred in urban areas
Offenders brought a weapon to the crime scene with them	Offenders did not bring a weapon to the crime scene with them

Higher use of blunt instruments	Lower use of blunt instruments
Higher rate of sexual motive*	Lower rate of sexual motive*

Source: Salfati et al (2014b:20).

Note: *Salfati and Bateman's (2005) study found that US offenders had a higher rate of sexual motive, therefore in this case, measurement and definition is crucial to reaching a consensus regarding sexual motive in serial murder.

The aim of cross-national comparisons is to identify shared features of serial murder in general and to distinguish conspicuous differences that may be influenced by the specific country in which the murder series occurs. In this way, a clearer understanding of the phenomenon emerges which could have a practical application to solve cases more efficiently. The contextual difference can be observed within two spheres (Sorochinski, Salfati & Labuschagne, 2014:2):

1. Tool availability and physical environment: this impacts how the offender plans to commit the crimes and which means are used to commit the crimes. For example, some countries may have easier access to firearms, making it the decided weapon for the offender. The physical environment of the offender may affect the offender's manner of procuring a victim;
2. Psychological factors: this concerns differences in the socio-economic and cultural customs, attitudes and practices that impact the victim-offender interaction.

Although there are many similarities between South African serial murder aspects and USA serial murder aspects, it must be stated that a broad generalisation cannot be made, especially with regard to offender profiling and case linkage, as South Africa has unique features that must be taken into account. Although only a small body of research exists in South Africa, it does not mean that there is a large undertaking of this type of research internationally. As with all research, international research agencies will experience limitations, such as lack of access to police records and offenders to conduct interviews with as well as small sample sizes (Labuschagne & Salfati, 2015:15). However, knowledge of current advances in research in other countries, such as the USA, can be useful for South Africa in terms of training interventions for the SAPS and further research (Sorochinski et al, 2014:13).

3.3 SERIAL MURDER INVESTIGATIONS IN THE UNITED STATES OF AMERICA

In 1908, during the presidency of Theodore Roosevelt, under Attorney General Charles Bonaparte, a force of special agents originally formed the Federal Bureau of Investigation (FBI). However, at the time of its creation, there were not many federal crimes for the FBI to investigate. There was also no formal training given to recruits, so previous law enforcement experience was a prerequisite. In 1924, J. Edgar Hoover, Director of the FBI, implemented a formal training course and restructured the organisation. During this time, an Identification Division was launched which tracked criminals by their fingerprints. In 1932, the FBI's Technical Laboratory, which was originally operated as a research facility, was inaugurated. The name for the agency, the Federal Bureau of Investigation, became permanent in 1935 and, in the same year, the FBI National Academy, whose main role was to train police officers in modern investigative methods, was established. In 1991, the FBI revolutionised the identification process with the use of DNA technology to either positively identify or rule out suspects. This led to the introduction of a national DNA Index, similar to that of the fingerprint database (Federal Bureau of Investigation (FBI), 2016a).

In the 1970s, new capabilities, methods and techniques allowed the FBI to play a role in addressing serial murderers. The Behavioural Research and Instruction Unit (BRIU), founded in 1972 at the FBI Academy at Quantico, pioneered the development of these new techniques and procedures. Special Agent Howard Teten, building on previous work, began to apply ideologies of psychology and behavioural science to understanding violent criminal behaviour. The study of Behavioural Science entails gaining a better understanding of human behaviour. The BRIU's team, at the National Center for the Analysis of Violent Crime (NCVAC), provides training, research and academic consultation in the behavioural sciences to support the FBI (FBI, 2013). NCVAC is a component of the FBI's Critical Incident Response Group (CIRG) and offers behaviourally-based operational support to federal, state, local and international law enforcement agencies in the investigation of unusual or repetitive violent crimes. Behavioural analysis acts as a tool to provide investigators with behavioural characteristics that can identify the most probable offender. The NCVAC encompasses five units (FBI, 2016b):

- Behavioural Analysis Unit 1: which deals with counterterrorism, arson and bombings;
- Behavioural Analysis Unit 2: which deals with cyber-crime, corruption and white collar crime;
- Behavioural Analysis Unit 3: which deals with crimes against children;
- Behavioural Analysis Unit 4: which deals with crimes against adults, including serial murder. This Unit also manages the Violent Criminal Apprehension Program (ViCAP); and
- Behavioural Analysis Unit 5: which deals with research, strategy and training.

In 1985, the FBI initiated the Violent Criminal Apprehension Program (ViCAP) at the National Academy in Quantico, Virginia. This centralised investigative network is operational at national and state levels and, through collection, collation, analysis and dissemination of information, is able to integrate all aspects of similar crimes in order to fast-track apprehension of a violent suspect. The program assists in the investigation of serial murder in the USA through the coordination of a multi-agency undertaking. Officers can access information and run searches about unsolved cases if there is a reasonable belief that one of their active cases may relate to it and could lead to the arrest of a violent criminal (Egger, 2002:289-293).

Once a murder series has been identified, law enforcement agencies need to work in tandem. Since the investigative function is the principal focus, all surrounding actions should be in support of that, including the formation of an investigative task force. The decision for the lead agency of the task force is based on various factors which include the number of cases, available resources and investigative experience. However, once formed, all law enforcement agencies involved in the case should be represented in the task force; this also aids in inter-agency cooperation during the investigation. The lead investigator, once appointed, has complete control over the investigation and should have the ability to review all incoming information, collate the information, assign leads, and delegate responsibilities if necessary (FBI Symposium, 2005:22).

A problem identified at the 2005 FBI Symposium was micro-management of the investigation by administrators. The role of the administrator should be to provide the lead investigator with the necessary support, which includes equipment, funding, manpower, liaising with other agencies/appointing a liaison to other agencies (e.g. forensic laboratory, medical examiner's office, prosecutor's office and other law enforcement agencies); and procuring the authorisations needed for the investigation to move forward. An important resource for the task force is a pre-tested, computer-based information management system to track leads and record information regarding the case (FBI Symposium, 2005:21-22).

The FBI's mission statement is to:

“protect and defend the United States against terrorist and foreign intelligence threats; uphold and enforce the criminal laws of the United States; and provide leadership and criminal justice services to federal, state, municipal, and international agencies and partners” (FBI, 2016c).

Even though the FBI, like the SAPS, faces challenges, commitment to these values can ensure more effective investigation of crime in the USA.

3.4 SERIAL MURDER INVESTIGATIONS IN SOUTH AFRICA

In 1997, the SAPS established an Investigative Psychology Unit (IPU) consisting of two members to assist with the investigation of serial murder crimes. This was expanded to a Section in 2011. Currently, the Investigative Psychology Section (IPS) is within the Forensic Services Division of the SAPS. The roles of this Section are to provide investigative support, training and research with regard to psychologically motivated crimes, which include serial murder (Labuschagne, 2012:1).

3.4.1 Investigative support

If a detective requires assistance on an investigation, he/she requests assistance from the IPS, which will act in an advisory capacity. The IPS member will provide support in the form of behavioural analysis (offender profiling), investigative guidance, risk assessment, interviewing of witnesses and/or suspects, crime scene

analysis, case linkage analysis and testimony in court. Because certain members of the IPS have assisted on over 100 serial murder cases since their induction into the Section, they are highly experienced in investigating serial crimes. Very few law enforcement agencies in the world have a dedicated unit, such as the IPS, tasked with investigating these types of crimes. The IPS has aided foreign law enforcement agencies such as Scotland Yard, the Finnish Bureau of Investigation, the Netherlands National Police, the Indian Central Bureau of Investigation, and the Namibian and Royal Swazi Police departments on cases (Labuschagne, 2012:4-5).

3.4.2 Training

Training is provided to investigating officers by the IPS to identify and investigate psychologically motivated crimes. The term “investigating officers” includes various members of the SAPS such as detectives and Local Criminal Record Centre (LCRC) members (Labuschagne, 2012:5). This is similar to the FBI’s Behavioural Analysis Unit 5 (BAU 5) which provides training and research to FBI National Academy students, new FBI agents, intelligence analysts, current FBI agents and Citizens’ Academy in support of the FBI’s mission. The BAU 5 is mainly staffed with members who have advanced degrees and/or experience in the disciplines of psychology, sociology, criminology, conflict resolution, research and program management (FBI, 2016b).

However, IPS training can also be given to other interested parties, for example, prosecutors and forensic pathologists, upon request. The IPS has also provided training to foreign law enforcement agencies. The goal of the training is to facilitate successful identification, investigation and prosecution of such crimes as well as to educate investigators about the role of behavioural analysts and when to utilise them. The training courses provided by the IPS include Serious and Violent Crime, Family Violence, Child Protection and Sexual Offences, Organised Crime and Psychologically Motivated Crimes. The Psychologically Motivated Crimes Course is presented once a year to 25 members of the Detective and Forensic Services Divisions and is rigorously evaluated to ensure a high academic standard (Labuschagne, 2012:5). Similarly, the BAU 5 training focuses on the application of behavioural science for law enforcement operations (FBI, 2016b).

3.4.3 Research

The reason for research to be included as an initiative by the IPS is to understand psychologically motivated crimes better which, in turn, expedites efficiency in the investigative support and training pillars. As foreign research has proved to be of limited use, research from a South African perspective needs to be undertaken. The SAPS has a thorough database of solved and unsolved serial murder cases which include suspect details for research and offender profiling purposes. Research links have been created, among others, to institutions in the United Kingdom (UK) and the USA, John Jay College of Criminal Justice and Alliant International University as well as to South African institutions. The IPS has also been acknowledged in international literature as a world leader in its field (Labuschagne, 2012:6).

Omar (2008:1-3) gives a brief overview of an example of the IPS involvement in a serial murder investigation. After a patrol officer establishes that a reported crime needs further investigation and a detective then determines that the crime has the indicators of a psychologically motivated crime, the Provincial Coordinator for Psychologically Motivated Crimes (stationed in the Detective Service Division) must be notified. The Provincial Coordinator then liaises with the IPS and requests its assistance. Once the IPS is involved, a task team of detectives from the concerned area is mobilised by the Provincial Coordinator and a base of operations is set up. The IPS will be involved with the case in conjunction with the task team of detectives and, if an arrest is made, the IPS will aid preparation and testify in court proceedings. As part of the investigative support function, the IPS provides services such as behavioural analysis (better known as offender profiling), guidance to task team detectives, interviewing witnesses and/or suspects, analysing whether cases are linked (case linkage) and testifying in court (Omar, 2008:1-3).

3.5 CASE LINKAGE METHODOLOGY

More scientific- and behavioural-based efforts are being made to link crimes of a serial nature due to the increasing awareness surrounding this type of crime (FBI Symposium, 2005:viii). Some methods of case linkage are discussed below.

3.5.1 Offender profiling

A general overview of profiling is that it is intended to understand crime from both the offender's and the victim's perspectives. More specifically, the objective of profiling is the identification of the offender (if the offender is unknown), by predicting what kind of person is most likely to offend in given circumstances and what kind of person is most at risk to become victim (Kocsis, 2007:ix). In the SAPS, the term 'profiling' can also involve entering a known suspect's name or date of birth into various SAPS databases in order to glean as much information about the known suspect as possible. These databases include the Vehicle Registration System, Case Administration System, Home Affairs databases and the Firearms Registration System (Labuschagne, 2003:69).

Case linkage, as defined by Woodhams et al (2007a:118) previously, may be similar to profiling in that both approaches are used to investigate crimes committed by unknown perpetrators and they share the assumption that criminals are consistent in their behaviour across crime scenes. However, the authors regard profiling as a sister field.

The use of profiling can be traced back to the 1870s by Cesare Lombroso, who believed that criminals had specific ancestral characteristics, and these characteristics would define a criminal's unique physical and psychological profile. Although his reasoning is irrelevant to today's criminologists, his methodology can be used for furtherance of the field (Labuschagne & Borgeson, 2012:164-165). The earliest record of an 'offender profile' occurred more than 100 years ago, in 1888. Dr Thomas Bond, a doctor who was also a police consultant, gave his opinion on a violent offender who was terrorising the district of Whitechapel in London at the time. The violent offender was never identified and became known as Jack the Ripper. Dr Bond's opinion is still valid for the profile of some serial murderers today (Canter, 2004:2).

The practice of profiling became widely known when the FBI adopted methods in profiling in the mid-1970s. In 1994, Canter gave the name 'Investigative Psychology' to a field of psychology that explored the salient aspects of criminal behaviour, the

basis for crime linkages and guidelines for prioritisation of suspects. As it merges applied psychology, criminology and profiling, this facet of psychology relates to offender profiling in that it aids in the detection of offenders (Canter, 2004:7-8). According to Labuschagne and Borgeson (2012:178), Investigative Psychology has progressed to advance police investigations, the effective use of information and decision support systems. The field of Investigative Psychology is established in the UK but, in the USA, FBI profiling is preferred. Youngs and Canter (2005:340) describe Investigative Psychology as “the academic discipline that has emerged in response to the need for a more scientific basis to the ‘offender profiling’ advice given to investigators”.

The FBI method of profiling involves the following steps as an investigative technique to identify the personality and behavioural aspects of an offender based on analysis of the crime(s) he committed (Douglas & Burgess, 1986a:1):

1. Assessment of the criminal act itself;
2. Assessment of the crime scene(s) and related aspects;
3. Analysis of the victim;
4. Review of preliminary police reports;
5. Review of the coroner’s autopsy report;
6. Generate a profile of the offender; and
7. Suggest investigative methods based on the profile.

The type of information needed to generate an offender profile is set out by Douglas, Ressler, Burgess and Hartman (1986b:5). Firstly, profiling requires inputs such as those from the crime scene (physical evidence, pattern of evidence, body positions and weapons), victimology (background, habits, family, last seen, age and occupation), forensic information (cause of death, wounds, post mortem report, sexual acts and laboratory reports), preliminary police reports (background information, police observation, time of crime, who reported the crime, neighbourhood socioeconomic status and crime rate) and photographs (aerial, crime scene and victim). Secondly, it includes decision-process models such as homicide type and style, primary intent, victim risk, offender risk, escalation, time of crime and location factors. Thirdly, crime assessment involves reconstruction of the crime, classification of the crime, typology of the offender (organised or disorganised by

victim selection, control of the victim and sequence of the crime), staging, motivation and crime scene dynamics. Finally, a criminal profile is compiled and includes demographics, physical characteristics, habits, pre-offence behaviour leading to the crime, post-offence behaviour and recommendations for investigation. After the criminal profile is completed, the investigation of the crime ensues, with the apprehension of the offender being the goal (Douglas et al, 1986b:5).

South Africa is one of a few countries, including the United Kingdom and the USA, which has a dedicated unit trained in profiling and serial murder investigations. The training that this dedicated unit receives, however, is not formally accredited as yet (Youngs & Canter, 2005:340). It cannot be assumed that what works well in one country can be applied across the board. Thus, procedures or techniques in place must take cross-cultural or cross-national differences into account (Gorby, 2003:422-423).

The IPS defines offender profiling as “any activity specifically undertaken with the intent of assisting an investigator to determine the most likely type of individual to have committed a specific crime.” The process employed by the IPS is similar to the FBI method of profiling in that it includes an assessment of the crime scene, attending the post-mortem and the examination of all relevant documents. This information is then weighed against existing research and then hypotheses are formulated to draw conclusions about the offender as an individual. The aim of offender profiling is to aid the investigator with the investigation by indicating the type of person who committed the crime. The profile may narrow down a list of suspects, but concrete evidence is still needed to link them to the crime (Labuschagne, 2003:67-68). However, as the information contained in a standard offender profile corresponds with too large a number of the South African population due to the broad conclusions that can be drawn from a profile, the IPS compiles a ‘linkage matrix’. This linkage matrix is purposely tailored to the specific crime and offender (Respondent 1, 2015).

According to Holmes and Holmes (2009:7), there are two different stances that can be taken to develop a profile, the inductive approach and the deductive approach. The inductive approach to criminal investigative assessments assumes that if certain

crimes perpetrated by different offenders are similar, then the offenders also share common traits. Past crimes, past known offenders and other sources of information are gathered to make this assumption. The advantage of this type of profile is that it is a cheap and quick method that is not obliged to draw from various academic disciplines. This means that the profiler does not need to have in-depth knowledge of other sciences and merely draws conclusions from assessments of similar crime scenes.

The other approach of deductive criminal investigative assessments extracts information from a comprehensive analysis of the crime scene and evidence at the scene to construct a profile of the offender. This profile evaluates the offender as an individual who is different from offenders who have committed similar crimes. Victimology plays a crucial role here as Holmes and Holmes (2009:7) believe that the more one knows about the victim, the more one can infer about the offender. The composition of this type of profile is painstakingly slow and the profiler depends on information about the crime scene provided by the police agency, which can sometimes be lacking. Nevertheless, inductive profiling is not as reliable as the deductive method of profiling.

The value of either method aside, improper profiling can have the prejudicial effects of (O'Connor, 2012:7):

- a) Delaying the apprehension of an offender by providing false leads;
- b) Delaying the apprehension of an offender by propounding false suspects;
- c) Delaying the apprehension of an offender by omitting viable suspects;
- d) Affecting citizens' personal lives by casting guilt on them based solely on the characteristics of a profile.

In terms of the validity of profiling as a scientific method, Kocsis and Palermo (2007:328-332) are of the opinion that there is a lack of evidence to prove that profiling actually works. In order to qualify the accuracy of a profile, validity and utility of the profile should be considered. The authors' record of the earliest documentation to support profiling was an FBI internal report that stated that 80 percent of profiles constructed by the then-named Behavioural Sciences Unit were accurate. However, this report was not made public and an outside source has not validated these

findings, thus making the evidence hearsay at best. In terms of utility of a profile, the evidence the authors found in support of this was also mostly anecdotal. Nonetheless, it must be remembered that proving usefulness of a profile is difficult as it may not be quantifiable in a tangible way.

Possibly the first empirically-based study undertaken to investigate the accuracy of profiling was undertaken by Pinizzotto and Finkel (cited in Kocsis & Palermo, 2007:329-330), who published their findings in 1990. This study involved using and disseminating solved case details to small groups of trained profilers, police detectives, clinical psychologists and students. The groups then answered a multiple-choice questionnaire to determine the characteristics of the likely offender. As the offender was known, the information from the questionnaires was compared to the actual profile of the offender. Regrettably, the findings from this study did not prove the accuracy of profilers beyond a doubt.

Further research similar to the studies undertaken by Pinizzotto and Finkel (1990), conducted by Hazelwood, Ressler, Depue and Douglas (1995) was documented by Kocsis (2007). This study sought to associate accuracy with the traits of the person compiling the profile. From this, four general attributes emerged as being necessary for compiling an accurate profile (Kocsis, 2007:370):

1. An appreciation of the criminal mind and the capability to understand the type of person to have committed the specific crime;
2. Investigative experience;
3. An aptitude for objective and logical analysis; and
4. A 'psychic-like faculty of intuition'.

These findings only speak to the accuracy of the profile and not to the investigative value of the profile in an actual case. Kocsis (2007:379) suggests that more empirically based research on profiling be done to enhance the reputation of profiling as a scientifically-based forensic tool that courts can rely on.

3.5.2 Geographic profiling

Labuschagne (2006:184), as previously mentioned, is of the opinion that the abovementioned authors overlooked a crucial element of case linkage, that of the geographical behaviour of the offender. He purports that the analysis of the geographical behaviour of an offender as well as the geographic position of the crime scenes could determine the offender's residence or his preferred 'hunting ground'. Rossmo (2003:210) defines geographic profiling as "an investigative method that analyzes crime locations to determine the most probable area of offender residence." As a spatially based tool, this type of profiling makes inferences from the locations and geometry of crime scenes.

Rossmo (1995:217) suggests that, rather than studying research based on connecting crime scenes to offender residences, it would be more constructive to examine the crime scenes for indications as to where the offender may live. Scrutiny of crime locations may yield relevant information regarding geographic relations, characteristics and demographics of the area that may, in turn, give rise to evidence about the offender's spatial behaviour. Law enforcement agencies will then have the aid of a spatial map displaying the probable area(s) where the offender resides. This investigative approach, known as geographic profiling, is a form of offender profiling. The suggestion made by Rossmo (1995:217-219) is based on an investigation working 'inwards', rather than 'outwards'. Conventional investigations originate from information regarding the victim and the crime scene to locate the offender. Using geographic profiling to investigate 'inwards' examines the locations of the crime scenes to indicate where the offender may reside.

Holmes and Holmes (2009:233) are of the opinion that the importance of geography has not been emphasised enough when investigating serial murder cases. They state that the analysis of criminal mobility and the understanding of the geographical aspects of a crime scene could lead to the progression of investigative profiling methods. Computerised case linkage systems, through the linking of similar crimes and crime scenes, make a vast amount of information available for geographic profiling.

Holmes and Holmes (2009:233-240) list the elements of geographic profiling:

1. **Distance:** as distance is a concept that means different things to different people, each offender's perception of distance will be exhibited in their behaviour.
2. **Method of transportation:** the offender's perception of distance is influenced by the mode of transportation available to them (e.g. if the offender has a car, uses public transportation or walks).
3. **Attractiveness of origins, destinations and travel ways:** these can be aesthetic or the route can be attractive due to the amenities available along the way. It must be remembered that, for most people, familiarity is comfort and serial murderers may be no exception in that the more familiar an offender is with a certain highway or area, the more places he is acquainted with to commit a crime in the manner he wants. If a certain victim regularly uses a certain route to travel, it may make that route attractive to an offender.
4. **Number and types of barriers:** these include rivers, toll gates, borders, highways or railway tracks and can influence a method of travel. This must be taken into account when utilising geographic profiling.
5. **Alternative routes:** the existence of several alternative routes gives the offender many opportunities to find locations to commit a crime and flee these locations if discovered.
6. **Actual distance:** measured objectively, has an effect on the offender's perception of distance.

As inconsistent as they appear to be, the locations where crimes occur are not completely random and often adhere to a spatial structure, with an underlying rationality (Rossmo, 1995:222). Everyone has a 'mental map' which is built up over time by our daily activities and experiences. These mental maps are influenced by sites of activity which we all have – our work, home, gym, shopping centres. These sites are linked by numerous streets, highways or paths. For a criminal, these sites of activity could include prisons, courts and previous crime locations (Holmes & Holmes, 2009:236). Crimes tend to occur where the offenders' sites and victims' sites of activity overlap. However, the area around an offender's residence is generally a 'buffer zone' as victims in such close proximity to the offender's residence pose a risk to the offender (Rossmo, 1995:223).

Many factors contribute to the difficulty in collecting reliable statistics. According to Snyman (1992:36), some of these factors are due to:

- The mobility of serial killers and their tendency to move around the country when committing murder;
- The murders being spaced over a significant amount of time;
- The absence of motive; and
- The absence of a relationship between the serial murderer and the victim.

Snyman (1992:36) points out that, as a result of these factors, the linking of cases geographically, by time, by motive or by relationship is difficult for any law enforcement agency. The systems of highways that exist make it possible for an offender to travel great distances to find a victim as well as to escape detection by law enforcement. During a serial murder investigation, it is important to pay attention to the geographical aspects of the crime; to ask *why* those aspects were attractive to the offender. Why did the offender pick that site for a victim? Why did he choose that specific neighbourhood to abduct a victim? Why that particular route of travel? When an offender starts committing crimes, special consideration should be given to the first locations of the crimes. The reason for this is that most offenders start committing crimes in a 'comfort zone' closer to what they are familiar with and, as the offender gains confidence, the locations may be further and further away (Holmes & Holmes, 2009:237-238).

Various mathematical and geographical models and/or principles can be applied to determine a geographic profile. A few examples include computerised systems such as Geographical Information System (GIS) and the Criminal Geographic Targeting (CGT) system, Venn diagrams and vectors, 'navigational metrical tests' and geoforensic analysis. All these methods are employed with one goal in mind: to use target patterns to determine an offender's spatial characteristics (Rossmo, 1995:220-223).

Since the basis of geographic profiling is an examination of crime-site locations, case linkage of the crime scenes is necessary as it must first be determined which crimes form part of the same series. Once geographic profiling has been applied and a

geographic profile assembled, various investigative techniques can then be utilised more effectively. For example, as serial murderer profiles tend to produce too many suspects rather than too few, suspect prioritisation can be done more accurately if a geographic profile is in place. A law enforcement agency can deploy a large number of officers to an area if it has been identified as a possible location for a suspect to be situated. Police dispatch and record systems can also be used to narrow down the location of an offender, such as records of recently released parolees or sex offenders in a specific district. When a murder series is identified, a task force can be formed to investigate. The large amount of information gathered by the task force is usually recorded on a computerised system which may not be capable of handling that amount of data. Geographic profiling can relieve this problem somewhat by prioritising addresses, postal codes or telephone numbers which makes accessing the information that much more efficient (Rossmo, 1995:229-232).

Based at the Council for Scientific and Industrial Research (CSIR) Centre for Logistics and Decision Support, Schmitz (2004) released a technical report, the aim of which was to assess whether or not geographic profiling could be of use in South Africa when investigating a serial case. A demonstration version of Rigel Profiler was used to do the study as well as CrimeStat's Journey-to-Crime routines as a second model to get an unbiased observation of geographic profiling.

Schmitz (2004:5) used the 'least effort principle' which is applied when people form mental maps (as alluded to by Holmes and Holmes (2009:236)) of the areas in which they move around. He purports that people tend to be lazy and thus the least effort principle will influence their mental maps. These mental maps are affected by the person's awareness and activity space. Awareness space is the areas that the person has general knowledge of and activity space is found therein. Serial murderers often commit crimes within their activity spaces, or close by, thus the locations of the crime scenes are linked to their awareness and activity spaces and can be used to find the anchor points of the serial murderer.

CrimeStat is a software product that incorporates the algorithms developed by Levine and Associates of the Journey-to-crime routines. CrimeStat, as explained by Levine (2006:41), is "a spatial statistics program used in crime mapping". The software

allows for the intake of incident locations and the output of statistical information that can be viewed in a GIS program. The program's applications include spatial description, hot spot analysis, interpolation, space-time analysis and journey-to-crime modelling.

The geography of crime involves the place and time that the crime took place. Journey-to-crime and Rigel are tools that use the location of the crime scenes and analysis thereof to find the location of the offender's residence. Through research, the following observations were made by Rossmo (2000:99-100) regarding CrimeStat's Journey-to-crime:

- Crimes occur close to the serial offender's anchor point(s);
- The further away an offender travels from his anchor point(s), the number of crimes committed decreases;
- The type of crime committed is influenced by the distance from the anchor point(s). For example, violent crime, rather than property crime, is committed closer to the anchor point;
- The crime trip pattern is affected by high crime neighbourhoods; and
- As the serial murderer becomes more comfortable and better at committing the crime, the distance from the anchor point increases.

The Rigel Profiler is an instrument that was designed on the principles of geographic profiling developed by Cst. Kim Rossmo of the Vancouver Police Department. In order to use the program, an investigator must have linked a series of crimes with a minimum of four events in the crime series. The Rigel Profiler uses the Criminal Geographic Targeting (CGT) algorithm, which maps an offender's movements mathematically. Once this data regarding the suspect's movements are entered, the program generates a two- or three-dimensional map of possible locations of the suspect's residence as well as a statistical report on the suspect (Miller, 2003:130-131).

After employing both methods on South African closed serial murder and rape cases, the conclusion, drawn by Schmitz (2004:61), was that both methods were able to map the geographic profile of the offender, to varying degrees. Both models have

advantages and disadvantages. CrimeStat, while being free, downloadable software, assigns the same weight to every crime scene location, whereas Rigel Profiler allows for different weights to be assigned to each scene. This means that if an investigator is 80 percent certain that one crime scene location forms part of the murder series, he can assign an 80 percent weight to that location and 100 percent weight to the other crime scenes that he is confident form part of the murder series and the algorithm will take this into account (Schmitz, 2004:61-62).

DragNet, developed by Prof. David Canter, is another type of geographic profiling software. However, at the time of undertaking of the study, DragNet was not available to Schmitz (2004:i) for assessment. Issues with geographic profiling were discussed by Paulsen (2005) at the UK Crime Mapping Conference, and included a lack of independent research on the topic, lack of empirical findings, data issues (small samples, serial murder cases only and non-random case selection), and lack of accuracy in comparison to other methods.

3.5.3 DNA profiling

DNA, or deoxyribonucleic acid is a bio-chemical molecule found in the cells which makes each species distinctive (South Africa, 2013:4). The relevance of DNA forensically is that, with the exception of identical twins, every person's DNA is unique and can be used for individualisation purposes (Meintjes-Van Der Walt, 2008:24). The information contained in a DNA profile includes gender, hereditary diseases and personal traits such as eye colour, hair colour and height. DNA profiling, when used forensically, is essentially matching individuals' DNA profiles to each other and was first recognised in 1984 by a British scientist, Alec Jeffreys. DNA can be extracted from hair, skin cells, blood, fragments of bone, or teeth, as well as bodily fluids left at a crime scene (Palermo, 2006:484).

DNA profiling is possibly the most common way in which cases are linked (to each other as well as to the offender). The value of DNA profiling as an investigative tool is indispensable and may be used to (South Africa, 2013:18):

1. Identify potential suspects from DNA found at a crime scene;
2. Prove the innocence or guilt of an accused in court;

3. Exonerate a convicted person of a crime;
4. Assist with missing persons' identification;
5. Identify human remains.

If the same DNA profile(s) are found at different crime scenes, profiling the samples might help to identify patterns of behavior which could aid in the investigation of past, current and future crimes. This also allows for the suspect(s) to be linked to many crime scenes (Heathfield, 2014:1). 'Hard' evidence, in the form of a DNA match to a crime scene, could also promote confessions and plea bargains from suspects.

DNA profiling should be the first thing any detective thinks about. According to Locard's exchange principle, a perpetrator will bring something of his to the crime scene and leave with something from it. At a crime scene, there is always a possibility that the suspect was injured and left blood at the scene, or that urine or saliva could be present (De Wet, Oosthuizen & Visser, 2011:174). When investigating a crime, including that of serial murder, the source, location and type of DNA found may help clear up questions surrounding the circumstances of the crime. For example, if an offender's DNA is found in the victim's home, it can negate the offender's claim that he was never there. If the offender's DNA is found under the victim's fingernails, this location of the DNA could indicate a struggle between the offender and the victim. DNA evidence can also prove the intention to commit a crime, for example, if an offender's DNA is found on the inside of a balaclava (Meintjes-Van Der Walt, 2008:23-24).

In the USA, the DNA Identification Act came into effect in 1994 and authorised the creation of the Combined DNA Index System (CODIS). This DNA profile database allows law enforcement agencies to identify suspects in cases where the offender is unknown. Since this database is nationally implemented, it supports inter-agency and inter-institutional informational sharing on profiles, casting a wider net for DNA matches (De Wet et al, 2011:196-197).

In South Africa, the second Criminal Law (Forensic Procedures) Amendment Act 37 of 2013 (the DNA Act) provides for the expansion and administration of the National Forensic DNA Database of South Africa (NFDD) which authorises the SAPS to match

forensic DNA profiles derived from samples collected at crime scenes with forensic DNA profiles of offenders convicted of, and suspects arrested for, offences listed in a new Schedule 8 of the amended Criminal Procedures Act of 1977, thus effectively making the linking of crimes scenes more proficient. It stands to reason that the more DNA profiles that are loaded onto the Database, the greater the chances of solving crime and apprehending offenders. The DNA Bill was approved by Cabinet in April 2013 and formally introduced into Parliament on the 8 May 2013 and assented to by President Zuma in January 2014. The commencement date of the DNA Act was 31 January 2015 (South Africa, 2013).

The DNA Act provides for (South Africa, 2013:18):

- The amendment of the South African Police Service Act of 1995 to facilitate the establishment and regulation of the NFDD;
- The taking of specified bodily samples from certain categories of persons for the purposes of forensic DNA analysis;
- The conditions under which the samples or forensic DNA profiles derived from the samples may be kept or the periods within which they must be destroyed;
- The use of forensic DNA profiles in the investigation of crime and the use of such profiles in proving the innocence or guilt of persons before or during a prosecution or the exoneration of convicted persons; and
- Assistance in the identification of missing persons and unidentified human remains.

The NFDD consists of six indices containing forensic DNA profiles, namely, a Crime Scene Index, an Arrestee Index, a Convicted Offender index, an Investigative Index, an Elimination Index and a Missing Persons and Unidentified Human Remains Index. A DNA Database can only be successful if its reference indices contain enough DNA profiles of known individuals to run a speculative search against DNA profiles collected from crime scene samples, in order to identify possible suspects. Currently, South Africa has a hit rate of less than ten percent because crime scene-derived DNA profiles far outnumber reference DNA profiles contained in the indices (South Africa, 2013:18). Over time, this problem could be rectified due to the DNA Act as more samples are loaded onto the Database.

When a sample is taken from a crime scene and needs to be profiled for DNA, it is sent to the Biology Section of the Forensic Science Laboratory, which consists of approximately 300 members (including administrative personnel). The sample then goes through many processes to determine a DNA profile. Current standard methods of DNA profiling analysis are based on STRs (Short Tandem Repeats) and the process to be adhered to is as follows (Respondent 20, 2015):

1. Presumptive testing is done at the Evidence Recovery Lab: analysts perform tests on the sample to screen for the presence of possible blood or semen. This serves to identify samples that are most likely to yield a DNA result with evidential value but this stage does not yet detect whether DNA is present or not.
2. If the sample is positive, it is submitted for the DNA Analysis Process which consists of many steps. Each examination is usually conducted by a different analyst or may even be fully automated (i.e. performed by specialised instruments):
 - i. DNA Isolation Laboratory: isolates the DNA from the sample.
 - ii. Q-PCR Process (Quantitative Polymerase Chain Reaction): determines if there is enough DNA extracted from the sample to obtain a DNA profile. If a sufficient quantity of DNA is detected in the sample, the sample will continue on to the next step of analysis.
 - iii. PCR Process (Polymerase Chain Reaction): This process exactly replicates the existing small number of DNA strands into a large magnitude to make it easier to determine a DNA profile.
 - iv. Electrophoresis: this process separates the DNA strands in order to generate a DNA profile that is digitally captured and stored.
 - v. Expert software systems (Genemapper IDX and STRGazer software are applied to the raw DNA data to assess the DNA result obtained against strict quality criteria. Should all quality criteria be met, the DNA profile will be committed to the DNA Database in a numeric table format where it can be used for comparative and interpretive purposes.
3. Interpretation level: firstly, a Status Reporting Officer is responsible for following the DNA sample through all stages of the process in order to ensure that the process is followed correctly and can employ corrective measures if

necessary. Secondly, a Writing Reporting Officer issues a report with the interpretation of the DNA results.

4. The DNA Database software system automatically runs the generated DNA profile against all other DNA profiles on the Database to find possible matches/links to another crime scene/to a suspect or victim. If there is a 'hit' to another case, the Reporting Officer is notified and then he/she sends the questioned cases to DNA Database (which falls under the Quality Section of the FSL) to investigate.
5. DNA Database verifies the link and creates a cluster code for the collective of linked cases. They then send the verified link to the DNA Serials Team to compile the final DNA report for court purposes.
6. The DNA Serials Team (a branch of the Biology Section) issues a report on the link between cases and liaises with the investigating officer(s) on one or all of the linked cases. A 'best practice' for the DNA Serials Team is to obtain a 'confirmation sample' (a sample *known* to be taken from the offender) so that any doubts about the linkage can be eliminated. The request for a confirmation sample is made to the investigating officer by DNA Database. The DNA Serials Team may also receive a request from investigating officers who suspect cases may be linked to each other or to an offender, the Team then confirms this linkage or not. The DNA Serials Team issues affidavits for positive findings (a link) and testifies in court on the evidence if necessary.
7. The Review Office then provides an independent check on the quality of the process that the DNA sample has travelled through to ensure that the proper findings were made in the correct way. It is also possible for a reviewer at the Review Office to notice linkages between cases. In that case, it is then referred to the DNA Serials Team for analysis.

Although the presentation of DNA evidence in court may be challenged on scientific and statistical calculation grounds, the techniques used in DNA evidence are well established and scientifically validated. DNA tests, which are based on statistical probability, are useful for identification because DNA profiles are highly variable across different people, making it unlikely that two people will have exactly the same profile (Meintjes-Van Der Walt, 2008:22).

Challenges with the presentation of DNA evidence in court could result from the actions surrounding the DNA sample at the crime scene. Thus, the proper collection, preservation and transportation, as well documentation, of forensic evidence from a crime scene are vital, as contamination of a sample may influence results. In the case of *S v Maqhina* in 2001, the court decided that where the guilt of the accused depends solely on the results of a scientific analysis that “it is of paramount importance that the testing process, including the control measures applied, be executed and recorded with such care that it can be verified at any time by an objective expert and the trial court”. It should also be remembered that the prosecution has a clear advantage regarding DNA evidence. Since the sample collected is generally a small amount, the defence lawyers will not have access to conduct independent tests on the sample. Additionally, most accused do not have access to the funds required to have private experts conduct tests (De Wet et al, 2011:180-185).

The improved technologies used by the Forensic Science Laboratory as well as the quality control measures that are applied to every step of the process ensure that DNA profiling is a reliable and valid method. However, there is a need to educate trial lawyers about the intricacies of DNA evidence to safeguard against bias (De Wet et al, 2011:199).

3.5.4 Integrated Ballistics Identification System (IBIS)

A study undertaken in 2013 by two New York based cardiologists, using information from the World Health Organisation and Cambridge University’s Small Arms Survey, found that South Africa has the second highest rate of firearm-related deaths in the world with 9.41 deaths per 100 000 people. The USA has the highest rate with 10.20 deaths per 100 000 people, however, it must be kept in mind that the USA also has a higher ratio of firearms to population with 88.8 firearms per 100 people (Bangalore & Messerli, 2013:873-874).

Law enforcement agencies are faced with many challenges when processing firearm-related evidence. Traditional manual methods of processing evidence require time and resources, and often result in backlogs of evidence and missed investigative

leads. Some agencies have a shortage of qualified firearm examiners, while others need to coordinate national programs across multiple jurisdictions that spread over large geographical areas. The successful investigation of firearm-related crimes relies upon the quantity, quality and timeliness of forensic ballistics information. This information can only be of value to police if it is properly collected, processed and disseminated (Forensic Technology, 2015:1).

Forensic ballistics examinations involve the identification of ammunition components having been fired from a specific firearm. During the firing process, the firearm transfers unique microscopic marks (created during the manufacturing process of the firearm) to the ammunition components (usually cartridge cases and bullets) which can be used for identification purposes. The different types of marks on a cartridge case that can be used for examination include firing pin, ejector, extractor, breechface and chamber marks. On bullets, land and groove marks (created by the rifling of the firearm) can be used for comparison purposes. When a questioned ammunition component is found on a crime scene, it is collected and catalogued by the relevant authorities and sent to the Ballistics Section for analysis. If a suspect firearm is recovered, the firearm, too, will be sent in for analysis. The Ballistics examiner will then fire test (known) ammunition in the suspect firearm to use for microscopic comparison to the questioned (unknown) ammunition components. After this comparison is made and findings determined, the test cartridge case and bullet will be acquired on the Integrated Ballistics Identification System (IBIS), which was developed by Canadian company, Forensic Technology. The IBIS is also used by the FBI and the ATF (Bureau of Alcohol, Tobacco, Firearms and Explosives) (Schehl, 2000).

The IBIS links firearm-related crimes by matching bullets and/or cartridge cases which were fired from the same firearm. The automated system digitally captures an enlarged image of the unique microscopic marks on the bullets and cartridge cases and extracts a numerical signature from each region of interest. The signatures on the IBIS network are then compared to each other with the intention of finding a match (or 'hit'). The most likely match is visually confirmed by an IBIS technician on Matchpoint™ (a component of the IBIS system) and then physically confirmed by a Ballistics expert using a comparison microscope. A report containing positive findings

is then sent to the investigating officer of the case and can be used for investigative purposes (Forensic Technology, 2015:2).

IBIS technology essentially professes that it can find the 'needle in the haystack'. The list of possible matches it suggests is generated at speeds that are well beyond human capability. This enables forensic experts to provide investigating officers with valuable and timely information about crimes, firearms, and suspects. Since 1991, IBIS has generated over 50 000 hits worldwide which, in turn, have linked over 100 000 gun related crimes. These links provide policing agencies with leads that could solve crimes more efficiently (Forensic Technology, 2009).

3.5.5 Automated Fingerprint Identification System (AFIS)

Fingerprints are the contact impression which is caused by the raised part of the friction ridge skin and remain unchanged during a person's lifetime. The unique arrangement of arches, loops, whorls and composites has been used to identify individuals associated with investigations since the late 1800s (Hazarika & Russell, 2012:3524).

The techniques for detecting latent fingerprints depend on the type of surface on which the fingerprints may be. On porous surfaces, ninhydrin solution and iodine/benzoflavone spray may be used; while cyanoacrylate esters ('superglue') fuming and vacuum metal deposition are effective on non-porous surfaces. The most widely used method for developing latent fingerprints at crime scenes is the fingerprint powdering technique (Hazarika & Russell, 2012:3524).

Once these latent fingerprints are collected at the crime scene, a technician enters the latent print onto the AFIS. The AFIS uses an optical scanner to scan, store a digital image of fingerprints and search its files to produce likely matches for the fingerprints entered. A trained evaluator will then compare the likely matches to the questioned fingerprint to determine if there is a positive match (Matlala, 2012:2). The acquisition of an AFIS was approved by cabinet in 1996, however due to lack of budget for the system, the SAPS continued its manual fingerprint examinations. In 1999, the French Government offered financial assistance to the SAPS to procure an

AFIS and, in 2000, documentation was signed to confirm the agreement (Du Toit, 2003).

The AFIS falls under the administration of the Local Criminal Record Centres (LCRC) of the Criminal Record Centre (CRC) component of the SAPS. The LCRC encompasses the Fingerprint Identification Profile System (FIPS) Section which manages and processes fingerprints for investigative purposes. This Section also monitors criminals and their activities. The creation of this Section and the AFIS have led to a more efficient method of identification of criminals and a more resourceful criminal justice system (Matlala, 2012:4).

The increased efficiencies that AFIS has afforded the SAPS include (Matlala, 2012:19):

1. Increased crime information flow;
2. Improved field operational performance with use of the portable handheld version of the AFIS (the 'Morphotouch');
3. Enhanced search capacity as the AFIS yields faster response times;
4. Better storage capacity contained in one place; and
5. User-friendly and uncomplicated interface.

However, as with all automated databases, the AFIS is not without its challenges which involve loss of expertise of trained members, training costs, centralisation of the LCRC, availability of funds and the lack of inter-departmental connectivity. The last challenge, if corrected, could result in extremely effective criminal investigations (Matlala, 2012:14-17).

3.6 EVALUATION OF COMPUTERISED CRIME LINKAGE SYSTEMS

With the exception of offender profiling, most of the discussed methods of case linkage are computerised, such as geographic profiling, DNA analysis, IBIS and AFIS. Thus, considering the practical use of computerised systems would be advisable. Besides ViCAP, started in 1985 by the FBI, other computerised crime linkage systems are in place in the USA, such as Washington State's Homicide Investigation Tracking System (HITS), New Jersey's Homicide Evaluation and

Assessment Tracking System (HEAT) and Iowa's Sex Crimes Analysis System (ISCAS). Canada also operates similar systems: the Royal Canadian Mounted Police's Major Crime File (MCF) and its successor, the Violent Crime Linkage Analysis System (ViCLAS).

Law enforcement agencies have engaged the use of computerised linking systems to determine if a series of crimes have been perpetrated by the same person. The computerised linking systems draw information from case files, such as offence, offender and victim information. However, the assumptions underlying these systems have rarely been tested empirically (Bennell, Snook, Macdonald, House & Taylor, 2012:3-4).

With regard to ViCAP, Brown (2014:10) explains that when a murder is committed, the case investigator has to fill out a laborious form with all the details of the case (including *modus operandi* and signature, if present), which is then sent to the FBI. The FBI then enters all the details into the database and the computerised system runs a search and then yields a list of crimes that have been committed which are similar to that specific crime scene. Brown observes that there may be a problem with the human factor of the case investigator who has to complete the initial form. If any information is left out or incorrectly entered, the case linkage becomes complicated as a computerised system cannot pick up on errors and only searches for crimes linked to the information entered.

Although systems may differ and the same system can be used in different ways, there is arguably a 'core procedure' of five broad steps that can be generally applied to most systems when linking crimes (Bennell et al, 2012:4-5):

1. Data related to a specific crime is collected and recorded;
2. Data is analysed for quality assurance and correction of errors made;
3. Data is entered into a computer database;
4. The data is examined by a trained analyst for potential crime linkages;
5. Relevant investigators are informed of possible linkages when the search for linked crimes is complete.

A search can be conducted using all, some or even just one of the variables from the offence, offender or victim information. The search can be expanded to include aspects such as MO of the offender or 'behavioural signatures'. Though not utilised often, computerised crime linkage systems could be used in court and presented as evidence to the linkage of a crime series being attributed to one offender. As long as crime information is stored carefully on a user-friendly crime linkage system, it could be the foundation for a plethora of valuable research studies to be conducted which do not necessarily have to relate to case linkage (Bennell et al, 2012:6-7).

According to Bennell et al (2012:7), there are four assumptions which will influence the efficiency of these systems:

1. Data can be coded reliably;
2. Data is accurate enough to draw meaningful inferences;
3. Serial offenders' behaviour is consistent across crime scenes but distinctive enough so that a pattern can emerge to enable the linkage process; and
4. Analysts can identify these patterns and link crimes accordingly.

The key concern in terms of reliability is inter-rater reliability, i.e. whether two coders (investigators) enter the same information into the system in the same way. The validity of the conclusions drawn from the data can be tested by inter-rater reliability. In scientific research, an agreement of 80 percent is required to trust the data from which inferences and conclusions are drawn. Debatably, the same high standard should be expected from law enforcement (Bennell et al, 2012:8). Snook, Luther, House, Bennell and Taylor (2012:610-617) performed a study involving 10 police officers and a complex, detailed case file and asked them to enter the information into ViCLAS. They focused on occurrence agreement (to agree on what *did* happen, and not what *did not* happen). Of 106 variables, the average occurrence agreement was 31 percent. Only 11 variables reached 80 percent agreement.

In normal settings, the element of pressure to perform well may be present. It could be argued about these studies that the values reported may be an underestimation of true reliability as there was no pressure on the participants to perform well. It can also be said that these values may be an overestimation as the study was conducted in a controlled environment. If investigators could not achieve reliability in this setting,

it might be more difficult in a normal setting where the investigator may be more prone to distraction. What can be agreed is that little is known about the reliability of data stored in crime linkage systems. More research conducted on this topic will aid the field greatly as well as provide investigators with a clear understanding of variables so they can enter them correctly into the system. Some police organisations have opted to take away the responsibility of entering information into the system from investigators as they may not have the time, expertise or commitment to code the data (Bennell et al, 2012:11-12).

The quality and validity of the data is only as good as the accuracy of the data. As far as Bennell et al (2012:13-15) are aware, there has been no assessment as to whether the data stored in a system is accurate. The very act of coding information into a system allows for errors, for instance, if there are two unrelated options present and the coder accidentally enters the wrong option. This obviously affects not only the reliability of the data, but the accuracy of the conclusions drawn from the data. Most police organisations have quality assurance tools in place to minimise the impact of human error before data is coded into the system. However, evaluative studies can be done to gauge the accuracy of the information, for example, by checking the coded data against solved cases.

It is assumed that analysts have the necessary specialised skills to identify serial crimes with the aid of a linkage system however there is no research to prove this assumption directly. A study was conducted by Canter, Heritage, Wilson, Davies, Kirby and Holden in 1991 (as cited in Bennell et al, 2012:19-20) using law enforcement agents and civilians who had received no specialised training in linkage systems and gauged their effectiveness at identifying links. This study found that trained investigators were significantly more accurate than the civilians. These studies, however, do not prove that trained investigators can link crimes accurately. By providing the analyst with a training course aimed at giving information about what aspects to look for when linking crimes and training using the actual system, the accuracy did improve (Bennell et al, 2012:22).

There is a need for a wide-scale study to establish the success rate of existing computerised linking systems. The reason for future research on the effectiveness on these linkage systems is that (Bennell et al, 2012:22-23):

1. It will provide developers of the systems, analysts who use them and investigators who depend on the results with evidence that these systems are worthwhile in terms of cost, time and effort; and
2. Research will provide a baseline with which to compare future adjustments to coding frameworks, the updating of analysts' training and system upgrades.

The results from Snook et al (2012:617-618) suggest that the information contained in ViCLAS is possibly unreliable. The continued use of a system that contains unreliable information may directly influence case linkage abilities, for example, if an investigator follows a lead acquired from unreliable data, resources and expenses are used that could have been better spent elsewhere. In a worst case scenario, an innocent person could be arrested as a suspect for a crime that was accidentally linked to him via a computerised linkage system.

3.7 SERIAL MURDER AND THE MEDIA

Society today is highly technologically advanced and conduits for information are ever-increasing. It therefore becomes harder to filter the types of information we come into contact with and this includes crime. The media, through television, radio, film, newspapers and the Internet, has a pronounced effect on how we form ideas about crime and justice. In particular, crime drama television shows, which present 'realistic' portrayals of crime, blur the lines between reality and fiction while desensitising the audience to violent crime (Dowler, Fleming & Muzzatti, 2006:837-838).

Haggerty (2009:173) details six important preconditions for serial killing which are distinctively modern and are in keeping with the desensitisation of audiences. Those are:

1. The mass media and the rise of a celebrity culture;
2. A society of strangers;

3. A 'means justifies the end' rationality that is largely removed from traditional values;
4. Some groups of society are more at risk due to cultural frameworks of deprecation towards these groups;
5. Particular opportunity structures for victimisation; and
6. The idea that society can be engineered.

Haggerty (2009:173) is of the opinion that "serial killing is predominantly a media event". As this type of crime is statistically one of the rarest and most people do not have first-hand experience with a serial murderer, the media uses it as an opportunity to feed society's appetite for sensationalism and establish the serial murderer as a celebrity. The serial murderers, on the other hand, often revel in their newly-created celebrity and actively seek out media attention rather than be ashamed of their actions. Haggerty (2009:174) cites Ted Bundy and John Wayne Gacy as prime examples of serial murderers who basked in media attention by bragging, constantly monitoring the media and keeping their own newspaper clippings. Egger (2002:235) concurs with this notion, saying that serial murderers "seemed to enjoy their celebrity status and thrive on the attention they received".

Media coverage of crime can be inaccurate, biased and promote harmful policies on crime control. Print media can also paint an inaccurate portrait of crime by reporting only on a certain type of crime and ignoring others. Studies have indicated a strong relationship between media exposure and the desensitisation of certain criminal acts. On the other hand, the media can be used as a crime prevention tool by educating the public on disregarded social problems and mobilising support for these causes. Since the media can reach a vast audience in a short amount of time, it can be used to disseminate information regarding a crime to the public. For example, people can be made aware that a certain individual perpetrated a crime and to be on the lookout for him/her, or gain information about self-protection and safety issues (Capobianco, 2008:2-3).

It has also been postulated that the media has played a role in identifying a murder series before the police have (Respondent 1, 2015). The public acquires a lot of its education on many issues from the media, therefore, the media itself promotes

critical thinking in individuals, advocates responsibility from institutions, agencies, organisations and the government, informs the public on policy matters, as well as fosters accountability of decision-makers (Capobianco, 2008:5).

Research that has been undertaken to prove a link between the media and violent behaviour employs many theoretical models and usually takes two opposing standpoints: that the media is responsible for the crime in our society or that the media provides a public service in aiding crime prevention by educating the public about crime (Jewkes, 2015:1-3).

3.8 CONCLUSION

Linking crimes successfully increases the likelihood of apprehending offenders as well as excluding innocent suspects, thus making investigations more effective (Santtila, Pakkanen, Zappala, Bosco, Valkama & Mokros, 2008:263). Hazelwood and Warren (2004:317) agree that case linkage provides the investigator with a context, which allows for the efficient extraction of relevant information from crime scenes to advance the investigation.

Automatic computer models and statistical programs may supplement police investigations in terms of sorting through large amounts of data from different cases, but this should be used in conjunction with questionnaires on data collection and recording in order to facilitate standardisation and valid methods (Santtila et al, 2008:317). Geographic profiling, while relying heavily on case linkage, is based largely on proximity to the crime scene, which is beneficial only if the police in that jurisdiction have the technological capabilities to employ the geographic profiling methods. Behavioural analysis focuses on similarities and differences and is useful for excluding suspects but also could be used to study the evolution of an offender's MO, as well as many behavioural aspects of offenders that could aid the more accurate development of profiles. Victimology has not proved its usefulness for case linkage in the USA as yet, but is quickly becoming a recognisable field (O'Connor, 2012:3). However, in order to fully assess the efficacy of any method of case linkage in practice for serial murder investigations, further empirical research is necessary.

CHAPTER 4: CASE LINKAGE AND SERIAL MURDER INVESTIGATIONS IN SOUTH AFRICA

“Justice must always question itself, just as society can exist only by means of the work it does on itself and on its institutions” (Foucault, 1983:20).

4.1 INTRODUCTION

Santtila et al (2008:246) stress how the successful linking of crimes enables investigators to use their resources more effectively. Many forensic procedures may also be augmented after offences have been linked as a murder series.

In this study, the methods of case linkage employed by the SAPS to investigate serial murder are analysed and explained. Interviews were conducted with 23 respondents to determine and describe the case linkage methods used. Ten respondents were involved in the investigation of serial murder cases, eight respondents work within the Forensic Science Laboratory environment, four respondents are members of the Investigative Psychology Section and one respondent is a non-SAPS, South African citizen employed at the Council for Scientific and Industrial Research (CSIR), but works closely with the SAPS. All the respondents interviewed, with the exception of Respondent 6, were involved in at least one active serial murder investigation.

During the coding and analysis of the data collected, three phases of a serial murder investigation were identified and thematically examined. SAPS members performing different duties in different sections were involved in one of three phases of a serial murder investigation: the identification phase, the investigation and apprehension phase, and the trial and sentencing phase. The respondents' answers determined in which phase of the investigation they were involved. The case linkage methods that fall into that phase were then determined by the respondents' consideration of case linkage methods and their account of which methods were in place to aid serial murder investigation. The respondents' position, duties and responsibilities within the

SAPS further determined their role in the investigation as well as the case linkage methods that fell into each phase.

Understandably, certain case linkage methods can be utilised within more than one phase of the serial murder investigation. For example, DNA analysis can be used to identify that various crimes are linked as one murder series, as well as to identify a suspect. However, as DNA analysis is more effective and valuable when used as a tool to positively identify an individual as the perpetrator of a murder series, the researcher has placed DNA analysis as a case linkage method under the investigation and apprehension phase rather than part of the identification phase. Therefore, the effectiveness of a case linkage method utilised within a certain phase of the serial murder investigation will determine its placement within the phases of the investigation.

4.2 PROFILES OF THE RESPONDENTS

Each respondent was assigned a respondent number and divided into one of three categories, except for Respondent 6 (who is a non-SAPS member). The categories are: members of the Investigative Psychology Section, members of the SAPS involved in an investigative role (Detective Service members), and members of the Forensic Services Division. At the time of the interviews, the profiles of the respondents were as follows.

Respondent 1 is a commissioned officer within the Investigative Psychology Section, male, has 15 years' service, tertiary education, mother tongue English, involved in approximately 110 serial murder cases.

Respondent 2 is a commissioned officer within the Investigative Psychology Section, male, has 28 years' service, tertiary education, mother tongue Afrikaans, involved in approximately 80 serial murder cases.

Respondent 3 is a commissioned officer within the Investigative Psychology Section, female, has 21 years' service, tertiary education, mother tongue English, involved in approximately 55 serial murder cases.

Respondent 4 is a commissioned officer within the Investigative Psychology Section, male, has 29 years' service, secondary education, mother tongue Tswana, involved in approximately 3 serial murder cases.

Respondent 5 is a commissioned officer within the SAPS, male, has 27 years' service, tertiary education, mother tongue Afrikaans/English, involved in approximately 9 serial murder cases.

Respondent 6 is a non-SAPS member, male, employed at the CSIR, has 19 years' experience in his field, tertiary education, mother tongue German.

Respondent 7 is a commissioned officer within the SAPS, male, has 27 years' service, secondary education, mother tongue Afrikaans, involved in approximately 2 serial murder cases.

Respondent 8 is a commissioned officer within the SAPS, male, has 37 years' service, tertiary education, mother tongue Afrikaans, involved in an uncertain amount of serial murder cases.

Respondent 9 is a commissioned officer within the SAPS, male, has 23 years' service, secondary education, mother tongue Afrikaans, involved in approximately 6 serial murder cases.

Respondent 10 is a non-commissioned officer within the SAPS, male, has 27 years' service, secondary education, mother tongue Zulu, involved in approximately 2 serial murder cases.

Respondent 11 is a non-commissioned officer within the SAPS, male, has 21 years' service, secondary education, mother tongue Afrikaans, involved in approximately 3 serial murder cases.

Respondent 12 is a non-commissioned officer within the SAPS, male, has 16 years' service, secondary education, mother tongue Afrikaans, involved in approximately 5 serial murder cases.

Respondent 13 is a commissioned officer within the SAPS, male, has 26 years' service, secondary education, mother tongue Afrikaans, involved in approximately 5 serial murder cases.

Respondent 14 is a commissioned officer within the SAPS, male, has 16 years' service, tertiary education, mother tongue Afrikaans/English, involved in approximately 2 serial murder cases.

Respondent 15 is a non-commissioned officer within the SAPS, male, has 27 years' service, secondary education, mother tongue Tsonga, involved in approximately 1 serial murder case.

Respondent 16 is a commissioned officer within the Forensic Services Division, female, has 24 years' service, tertiary education, mother tongue Afrikaans, involved in an uncertain amount of serial murder cases.

Respondent 17 is a commissioned officer within the Forensic Services Division, male, has 15 years' service, tertiary education, mother tongue Afrikaans, involved in an uncertain amount of serial murder cases.

Respondent 18 is a commissioned officer within the Forensic Services Division, female, has 9 years' service, tertiary education, mother tongue Afrikaans, involved in an uncertain amount of serial murder cases.

Respondent 19 is a commissioned officer within the Forensic Services Division, male, has 28 years' service, tertiary education, mother tongue Afrikaans/English, involved in an uncertain amount of serial murder cases.

Respondent 20 is a commissioned officer within the Forensic Services Division, female, has 9 years' service, tertiary education, mother tongue Sepedi, involved in an uncertain amount of serial murder cases.

Respondent 21 is a commissioned officer within the Forensic Services Division, female, has 24 years' service, tertiary education, mother tongue English, involved in an uncertain amount of serial murder cases.

Respondent 22 is a commissioned officer within the Forensic Services Division, female, has 25 years' service, tertiary education, mother tongue Afrikaans, involved in an uncertain amount of serial murder cases.

Respondent 23 is a non-commissioned officer within the Forensic Services Division, female, has 23 years' service, secondary education, mother tongue Afrikaans, involved in an uncertain amount of serial murder cases.

4.3 PHASE 1: IDENTIFICATION OF A MURDER SERIES

The identification phase concerns the methods of case linkage employed to identify the existence of a murder series before a suspect is identified. For example, if seven female bodies are found in one location and they all have ligature marks around their necks, it would appear that the seven murders were perpetrated by the same offender. Certain case linkage methods will need to be employed to help determine that the murders do, in fact, form part of a murder series and investigators will need to focus on certain crime scene aspects to determine if these murders are linked and a murder series perpetrated by the same offender is existent. The most common case linkage methods stated by the respondents in the identification phase are *modus operandi*, signature, geographic location/profile, victimology and media. The researcher has also included a column for other findings, should the respondents mention further methods. Further methods are documented and explained below. A case study analysis was completed with a brief summary of the case, a description of how the case was solved and details of the sentence the offender received. A discussion regarding the case follows and documents the case linkage methods contained within.

4.3.1 Case study: the Moffat Park serial murderer (*S v Makhwekwe [2007]*)

Between December 2005 and October 2006, five corpses were found in Moffat Park near Rosettenville, Johannesburg. The first four victims were found within 200 metres of each other and the fifth victim was within 1000 metres of the others. All five victims were of African descent, all five of the victims were tied up, four of the victims were women, four of the victims were strangled and one victim was stabbed to death. The first three victims were found with items of clothing wrapped tightly around their heads. The first four victims were buried in shallow graves and the fifth victim was not buried. Authorities investigating the crimes did not confirm that the murders were perpetrated by a serial murderer until after he was arrested.

No Task Team was formed by the SAPS to investigate these crimes as a murder series. However, during the investigation, members of the public came forward with information regarding the murders as well as the identity of the offender and shortly afterwards Richman Gcnumuzi Makhwekwe was arrested as the suspect having perpetrated these murders. He subsequently confessed to these crimes and 'pointed out' the crime scenes to an independent member of the SAPS. He also admitted to carrying a spade with him to the disposal site. A search of his residence yielded cell phones belonging to two of the victims. In March 2008, Richman Gcnumuzi Makhwekwe, 'The Moffat Park serial murderer', was convicted and sentenced to five life sentences for murder, 20 years for three counts of rape and six months for theft, to be served concurrently.

4.3.1.1 Discussion

The case linkage methods which fall within the identification phase of a serial murder investigation to link separate murders as one murder series indicated in this case study are as follows:

- a) *Modus Operandi*: indicated by the fact that the offender preferred to strangle his victims, all the victims were tied up and pre-planning indications existed (carrying a spade with him to dig the graves to bury the victims).

- b) Signature: three of the victims were found with items of clothing wrapped tightly around their heads and the manner in which he disposed of all of the victims (burying them in a shallow grave).
- c) Geographic location: all five corpses were found in close proximity to each other.
- d) Victimology: all five victims were of African descent and four of the victims were female.

The serial murderer confessed to all the murders and was found in possession of the victims' cell phones, on which analysis was done. There was a sexual element present in this murder series as the offender raped three of his victims, which supplements the MO analysis that the cases were linked as one murder series. The offender operated on foot and lived very close to the crime scenes in Moffat Park.

This case study also validates the role that the community plays in a serial murder investigation, as members of the public supported the SAPS during the investigation by coming forward with information regarding the crimes. Case linkage methods that fall within the identification phase of a serial murder will be validated and further discussed with regard to responses given during the interview sessions conducted by the researcher.

4.3.2 Interviews

In response to the question, "in what ways can a murder series be identified?" respondents answered as follows (Matrix 1):

Matrix 1: Identification phase

IDENTIFICATION PHASE						
Respondent	MO	Signature	Geographic Location	Victimology	Media	Other
1	X	X	X	X	X	
2	X	X	X	X	X	
3	X	X			X	X
4	X	X	X	X	X	
5	X			X	X	X
6	X		X			
7	X	X	X	X		
8	X					
9	X		X			
10	X					
11	X	X	X			
12	X	X	X	X	X	X
13	X	X	X		X	
14	X					
15	X		X	X		
16	X					
17	X					
18	X					
19	X			X		X
20	X					
21	X					
22	X					X
23	X					X

Source: Compiled by the researcher.

Gorby (2003:421) agrees that investigative challenges such as lack of prominent motive, high geographic mobility of offenders, ostensibly random victim selection and

linkage blindness could contribute to a deficiency of case linkages being made by investigators. The author cites offender identification and crime linkage as the two most fundamental issues with investigations. MO is of utmost importance when linking cases; however it should be borne in mind that care must be taken not to reject a crime as part of a murder series based solely on dissimilarities in the MO (Douglas & Douglas, 2013:23-24).

When probed with the question of “In what ways can a murder series be identified?” (during the identification phase), respondents replied as follows:

- *Modus operandi* (23 out of 23 respondents);
- Signature (eight out of 23 respondents);
- Geographic location (ten out of 23 respondents);
- Victimology (eight out of 23 respondents);
- Media (seven out of 23 respondents);
- Other (six out of 23 respondents).

Other case linkage methods identified by the respondents were:

- Respondent 3 asserted cooperation between investigating officers and/or LCRC members as a good way to link cases;
- Respondent 5 stated docket analysis as well as the sharing of information regarding crime scenes visited by members within the LCRC environment as further ways in which a murder series can be identified;
- Respondent 8 stated that community policing could prove helpful as a forum for the sharing of information;
- Respondent 11 concurred with the lack of docket analysis done at station level;
- Respondent 12 similarly stated docket analysis and cooperation between investigating officers as case linkage methods;
- Respondents 19, 22 and 23 are of the opinion that ‘Identikit sketches’ (facial identification) are effective case linkage tools.

4.3.2.1 Docket analysis

Docket analysis is information-driven and has the purpose of narrowing the focus of a criminal investigation to inform investigative decision making and policies as well as to analyse specific crimes in terms of MO and the possibilities for linkages. Case docket analysis was introduced to the SAPS by the Crime Information Analysis Centre (CIAC) in 1995 and is currently performed at station level by the Management of Information Officer (Van Graan & Van der Watt, 2014:144-145).

Van Graan and Van der Watt (2014:148) set out the purposes of what docket analysis is meant to achieve:

- To provide detailed information about certain types of crimes;
- To investigate the reasons for SAPS members committing partner-murder;
- To determine the extent of female murder in South Africa;
- To record how case information was collected, processed and utilised, and if there are any problems with the process;
- To serve as a guideline for the distribution of resources;
- To gain explanations for the causes of crime;
- To inform crime-prevention strategies; and
- To identify common MO patterns and case linkages to indicate the existence of a serial offender.

However, as with all carefully laid out plans, docket analysis also has its challenges. As docket analysis depends on a human factor, dockets and/or statements may be incomplete, or illegible, the language used might be poor, the dynamics of the crime may not be determined or the offender's motive might be inscrutable (Van Graan & Van der Watt, 2014:150).

4.3.2.2 Sharing of information

In terms of sharing information between investigating officers and LCRC members, respondents 3, 5 and 12 were asked to elaborate on their understanding of cooperation. Respondent 5 gave an agreeable explanation by saying that LCRC

members attend many crime scenes over a larger area than the local station detectives, who will only investigate crime scenes within their jurisdictions. LCRC members are generally called in to photograph/record the crime scene, conduct fingerprint examinations, sketch the crime scene, collect forensic evidence and send it to the respective forensic departments. As so many scenes are attended, if the members discussed their cases with each other, they may notice similarities in the MO of some of their cases. Respondent 5 is of the opinion that since LCRC members attend more crime scenes, if they were more vocal with their colleagues about the crime scenes, from an educational standpoint, similarities between cases (e.g. MO, signature or victim selection similarities) may be noticed by the other LCRC members; a murder series might be identified and immediate action taken to investigate the case(s).

Community policing is essentially a collaboration between the police and the community that identifies and attempts to solve problems within the community. Members of the community become allies in the fight against crime. The Interim Constitution of the Republic of South Africa Act 200 of 1993 authorised the establishment of a community policing forum (CPF) at every police station in South Africa. The aims of the CPFs are to foster accountability of the police, to advise on local priorities, to monitor efficiency of the SAPS and to promote visible policing by SAPS members (Albrecht, 2008:44). The more communication there is between the SAPS and the community, the greater the chances of the apprehension of criminals; safety problems in the community being addressed; and corruption within the SAPS being reduced. Respondent 8 agrees that the involvement of the community could greatly increase the chances of criminal offenders being apprehended and held accountable for their actions.

Egger (1985:v) refers to the lack of sharing of investigative information and coordination between law enforcement agencies as linkage blindness, and considers this to be a serious problem which gives serial murderers the upper hand in an investigation. Wyllie (2009:1) agrees that the sharing of information between law enforcement agencies is beneficial to all parties involved. However, he states that the situation in the USA is not much better than in South Africa and cites organisational

inertia, structural and operational barriers, technological impediments, and a range of other cultural and behavioural obstacles as causes.

4.3.2.3 Facial identification

Respondents 19, 22 and 23 acknowledged facial identification as a case linkage method. Facial composites are created using various techniques employed to construct faces from memory: manual systems, such as sketching; and software programs such as Identikit 2000 and E-Fit, are utilised by the SAPS. All these techniques require a witness to select specific facial features (eyes, nose, hair, mouth, etc.) that resemble the suspect to create a facial composite (Frowd, Pitchford, Skelton, Petkovic, Prosser & Coates, 2012:20).

Respondents 22 and 23 are employed within the Facial Identification Section, which falls under the Crime Scene Management Section of the SAPS. Their role is to assist detectives with the ability to create facial composites, to age people from photographs for missing persons' purposes, to interview witnesses and to compile a facial composite that includes a description of the suspects' MO. It is via the description of the MO coupled with the product of the facial composite that allows for facial identification to be a case linkage tool. Two witnesses in different areas may describe the same suspect, which could be a coincidence in itself, but if they describe the same MO, the likelihood of the cases being linked is greater. In a serial murder case, the victims are not able to act as witnesses as they are deceased, however, the linking of cases using facial identification ties in closely with the use of MO as a case linkage tool and bears the need for further detail. Members of the Facial Identification Section often travel to rural areas (in addition to compiling facial composites at local, urban police stations), to interview witnesses to gain a facial composite. However, a South Africa-specific problem is that many residents of rural areas are afraid of technology and may not cooperate with the Facial Identification Section member. Another technology-related problem is that, in a rural area, there may not be electricity outlets to charge laptop batteries/cellular phones/etc. (Respondent 22, 2015).

4.3.3 Standing Operating Procedure

Respondents were also requested to answer: “Who is in charge of the investigation once a murder series has been identified?” The responses to this question varied greatly and, to the researcher, it appeared that no Standing Operating Procedure (SOP) was in effect regarding this. Thus, a follow up question, regarding the respondents’ knowledge of any SOP in place to govern the investigation of serial murder was asked of all respondents, (except Respondent 6, a non-SAPS member). The answers to this question were as follows:

- Six out of 23 respondents stated that there was no SOP in place governing a specific person/department to be in charge of the investigation once the murder series had been identified.
- Respondents 4, 13 and 14 were unsure of the existence of an SOP.
- Respondent 7 replied that there was an SOP, but it was not utilised by the SAPS in practice.
- Respondent 10 stated that a National Investigating Unit member will be in charge of the serial murder investigation.
- Respondent 11 cited a Provincial Investigating Unit member to be in charge of the serial murder investigation.
- Respondent 12 replied that a member from the local station where the case was identified, or the Provincial Investigating Unit or the National Investigating Unit will investigate the case as the lead detective as long as he/she has training presented by the IPS in the investigation of Psychologically Motivated Crimes.
- Respondent 15 stated that the lead investigator of the Task Team formed will be the lead detective for the serial murder investigation.
- Respondents 16, 17, 18, 19, 20, 21, 22 and 23 were not asked about the existence of an SOP. The reason for this was because they are members of the Forensic Services Division and liaise with a detective involved in the investigation. This detective may not necessarily be the lead detective in charge of the investigation, but instead may be a member of the Task Team, or an assistant to the lead detective.

The Civilian Secretariat for Police also stresses the importance of the implementation and enforcement of Standing Operating Procedures. It holds supervisors and managers responsible for communicating SOPs to the members of SAPS and, if the SOPs are not met with compliance, administrative review measures should be taken (Civilian Secretariat for Police, 2015b:26). Respondent 1 mentioned that the formation of a Task Team, composed of members who have been trained by the IPS in the investigation of Psychologically Motivated Crimes, to investigate a serial murder case is also stated in the best practices of the IPS, but the formation of such a team is not yet in effect in policy. The interview sessions with Detective Service members of the SAPS respondents (Respondents 5 and 7 to 15) concurred that a Task Team is not formed for every serial murder case investigated.

4.4 PHASE 2: IDENTIFICATION AND APPREHENSION OF THE SERIAL MURDERER

The investigation and apprehension phase of a serial murder investigation involves the case linkage methods used to identify the perpetrator of the murder series and execute the arrest of the suspect. The lead detective assigned to the murder series cases has to now employ investigative methods to elucidate the case and detect the offender. Identification and apprehension of the suspect is the priority. Such case linkage methods used during the investigation and apprehension phase were identified by the respondents as: DNA linkages, cellular phone analysis/tracking, fingerprints, IBIS and/or offender profiling. Any other methods mentioned by the respondents are documented below. Prior to a discussion of the respondents' considerations, a detailed record of a case study will be documented and an explanation of the case linkage methods that are displayed within it will be given.

4.4.1 Case study: the Quarry serial murderer (*S v Nyauza [2007]*)

In the Samrand Quarry and surrounding open fields near Olievenhoutbosch, Pretoria, five corpses were discovered between January and September of 2002. These murders were, at the time, attributed to the 'Highwayman Serial Murderer' who was operating in the area around the same time. However, between January and September 2006, 11 more corpses were found in the same area. Later, it was

determined that the five corpses found in 2002 were not the work of the 'Highwayman Serial Murderer' as he was in prison during this time and therefore these crimes were perpetrated by another offender. All sixteen murder victims were black females; most were found naked with blunt force trauma to the head and left in water.

Due to the similarity of MO, victimology and the geographic location where the victims were found, it was determined that these crimes formed part of the same murder series perpetrated by the same offender. A Task Team of Detective Service members and IPS members was formed in May 2006 to investigate the murder series. The investigation yielded further information from the victims' family/friends that solidified the link between the murders: many of the victims were lured by the offender with the promise of work. DNA evidence was found at four of the crime scenes and submitted to the Biology Section of the Forensic Science Laboratory for examination. In September 2006, a positive DNA link was made between DNA found at the scene of victim number 5 of the 2002 murder series to a suspect in a rape case that also occurred in 2002. The Task Team followed up on the last known address of the suspect and was led to his new residence by his ex-girlfriend. Two of the victims' cell phones were known to be missing and with the cell phone number and IMEI number of the phone, cell phone tracking analysis was able to be conducted by the SAPS and one of the cell phone's locations was able to be tracked via GPS.

The Task Team observed the residence of the suspect while tracking the cell phone and they were able to apprehend him near his residence. The suspect, Richard Jabulani Nyauza was apprehended and confessed to the crimes. He 'pointed out' seven of the crime scenes as part of his confession. Nyauza was also charged with the attempted murder of a woman who survived his attack on her in 2006 and testified against him in court. Former member of the IPS, Gérard Labuschagne, compiled a behavioural linkage analysis on the murder series and presented this similar fact evidence at the trial. The accused was convicted and sentenced to 16 life sentences, 80 years for rape, 45 years for robbery and 15 years for attempted murder, to run concurrently.

4.4.1.1 Discussion

This case study encompasses the following case linkage methods within the investigation and apprehension phase of a serial murder investigation:

- a) DNA analysis: DNA evidence was found at four of the crime scenes in the victims' bodies. A positive DNA link with the last victim of 2002 to the suspect in a rape case in 2002 led investigators to the offender.
- b) Cell phone analysis: one of the victims' cell phones was geographically tracked in order to follow the suspect via GPS. Further cell phones were found in the offender's residence after a search and analysed to establish links to the victims.
- c) Offender profiling: many of the victims were lured to the isolated area of the quarry with the promise of work from the offender and informed their family/friends before they disappeared; MO and signature factors were also present (blunt force trauma as cause of death to the victims and the fact that the victims were found in water). Due to these factors, investigators had an idea of the type of suspect they were pursuing.

The murders were originally linked as one murder series by means of MO, signature, geographic location and victimology. The confession by the offender and his pointing out of the crime scenes, as well as the behavioural linkage analysis presented by former member of the IPS, Gérard Labuschagne, aided solidification of the conviction of the offender. Further case linkage methods that transpired during the investigation and apprehension phase identified from the interview sessions are discussed below.

4.4.2 Interviews

In response to the question, "What methods/systems/techniques are currently in place to aid in the investigation of a murder series to link the series to a specific offender?", respondents replied as follows (Matrix 2):

Matrix 2: Investigation and apprehension phase

INVESTIGATION AND APPREHENSION PHASE						
Respondent	DNA	Cell Phone Analysis	Fingerprints	IBIS	Offender Profiling	Other
1	X		X	X		
2	X	X		X		
3	X					
4	X	X				
5	X				X	
6		X			X	
7	X	X			X	
8	X		X			X
9		X				
10	X					
11	X				X	
12	X					
13	X					
14			X			
15	X	X				
16	X		X			
17	X		X			
18	X			X	X	
19	X	X	X	X		
20	X			X		
21	X					
22						
23	X					

Source: Compiled by the researcher.

According to Gorby (2003:421), two of the fundamental issues in investigations are offender identification and case linkage. The author is of the opinion that DNA

analysis, case linkage systems and profiling may alleviate the problem. Santtila et al (2008:246) agrees with Gorby's statement saying that physical evidence, such as DNA or fingerprints, is a trustworthy method of crime linking.

Respondents' answers regarding case linkage methods during the investigation phase were mostly congruent with Gorby's (2003:421) abovementioned opinion and were as follows:

- DNA analysis (19 out of 23 respondents);
- Cellular phone tracking analysis (seven out of 23 respondents);
- Fingerprints (six out of 23 respondents);
- IBIS (five out of 23 respondents);
- Offender Profiling (five out of 23 respondents);
- Other (one out of 23 respondents).

Other methods identified by a respondent were:

- Respondent 8 stated that shoe-print identification could prove helpful as a case linkage method.

4.4.2.1 Cell phone tracking analysis

Cell phone tracking analysis within SAPS is performed by the Technological Investigation Support Centre (TISC), which provides support to detectives by analysing technological systems and evidence. During the 2013/2014 financial year, the TISC aided with 6556 profiles related to cell phone analysis (GCIS, 2015:318). Respondent 9 (2015) is a member of the TISC and sets out the main supportive responsibilities of the Centre in relation to serial murder crime:

- To determine if a victim's cellular devices were reactivated with new SIM cards;
- To record common numbers called by specific devices;
- To determine if there are links between the victim's handset and a suspect's device(s);
- Data recovery, for example, recovery of the IMEI number of the device to allow for analysis;

- Computer forensics: analysis of micro SD cards used in cellular devices, cameras, computers, etc.;
- To test the security of cellular devices;
- Analysis of device: e.g. analysis can show that a suspect's cellular device was used in this area at this time of day to call a certain number. This analysis enables geographic location pinpointing as evidence.

According to Respondent 9 (2015), there are 12 offices of the TISC in South Africa for detectives to use as supportive tools to an investigation. However, Respondent 9 mentioned difficulties experienced by the TISC, such as the fact that, since there are 12 offices, not all information is collated by one office and so a linkage might be missed, the sheer volume of information received from one device could take considerable time to analyse and the backlog of cases experienced by the Centre presents an obstacle.

4.4.2.2 Shoe-print analysis

Respondent 8's suggestion of shoe-print analysis at crime scenes could provide advantageous forensic evidence. An image of the shoe-print can be obtained using photography, gel or electrostatic lifting or by making a cast if the shoe-print is in soil. Thereafter, the shoe-print can be compared to a suspect's shoes to determine if that suspect was present at the crime scene or at various crime scenes. This verification can then be presented as evidence in court (Huynh, De Chazal, McErlean, Reilly, Hannigan & Fleud, 2003:569).

4.4.3 Inter-departmental cooperation

Besides cooperation between the SAPS and the community, Newham and Masuku (2004:4-7) stress the importance of inter-departmental cooperation amongst the police in order to promote community safety. The authors acknowledge that inter-departmental collaboration is a dynamic process that should cater to the needs and circumstances of all parties involved. Omar (2009:81) agrees that the SAPS detectives, laboratory members and prosecutors should meet regularly to address

matters of concern within the crime scene investigation process. The researcher understands that SAPS departments, working together, make for a more effective investigation. Thus, during the interview session, respondents were asked if they liaise with departments within the SAPS and if they had a good working relationship with these departments. All the 23 respondents confirmed that they liaise with other departments of SAPS, including the Detective Service, Forensic Services, Dog/K9 Unit, IPS, Criminal Record Centre (CRC), Crime Scene Management (CSM), LCRC, Victim Identification Centre (VIC) and TISC, in one capacity or another during a serial murder investigation. The responses regarding their working relationships were as follows:

- Fifteen out of 23 respondents had a good working relationship with the departments within the SAPS with which they liaised.
- Eight out of 23 respondents expressed that they did not have a satisfactory experience with other departments within the SAPS. Their reasons for this were:
 - Respondent 1 was of the opinion that Task Teams (when formed to investigate a case of serial murder) should not be shut down after the offender is apprehended as help is still needed to consolidate the case dockets. Members in managerial positions are responsible for making decisions regarding this. He also suggested that the IPS should consult with the prosecutor of the case(s) if forensic evidence is lacking. In that case, the IPS may be able to link that case to the series by means of behavioural analysis;
 - Respondents 2, 9 and 23 stated that there was a lack of capacity in some departments, especially forensic sections, to deal with the caseload so feedback on findings regarding forensic evidence are not always received timeously and may hamper an investigation;
 - Respondents 8, 13, 14 and 22 voiced a need for more communication between departments working on the same case as well as awareness about the departments within the SAPS that can be used to aid investigations, for example, FSL sections, Facial Identification Section and CSM;

- Respondent 12 was of the opinion that any detective assigned to investigate a serial murder case must have completed the course in Psychologically Motivated Crimes offered by the IPS;
- Respondent 23 asserted that, in addition to awareness and capacity, the SAPS must utilise resources more efficiently.

4.4.4 Inter-organisational cooperation

Respondents were further questioned about their working relationship if they liaised with organisations outside of the SAPS. All respondents, besides Respondent 6 (who is an outside resource of the SAPS), stated that they had good working relationships with other organisations. However, while Respondent 12 stated he had a good working relationship with outside resources, he asserted that the SAPS should not outsource all services and, wherever possible, a SAPS department should be responsible for the service required. Besides organisations, an outside resource of the SAPS includes informants who may be consulted with to gain information regarding a possible suspect or his whereabouts. The organisations or institutions mentioned as having a professional relationship with the SAPS include the following:

- Department of Health: pathologists/medical examiners and other health professionals fall within this department and aid the SAPS with regard to post-mortem examinations and reports, rape cases, etc.
- Department of Correctional Services: provision of background information on a suspect if they were previously arrested and/or served time in prison. Such information may include last known address, known associates, dates of imprisonments, etc.
- Department of Justice and Constitutional Development: state prosecutors/advocates fall within this department and must liaise with the SAPS members to coordinate on a case in order to ensure a conviction.
- Traffic Departments: aids with monitoring traffic cameras and can control the flow of traffic if it is needed during an investigation.
- University institutions: the University of Pretoria has an anthropology department that is utilised by the SAPS for examination of bones if decomposed bodies are found.

- Cell phone network providers: such as MTN, Vodacom, Cell C and Telkom are used by the SAPS to gain information and/or access for cell phone analysis purposes.
- The media: liaise with the SAPS to inform them of possible murder series, to warn the public about the existence of a serial offender in an area, to ask for community assistance in an investigation, etc.
- Community Policing Forums: coordinate with the SAPS to assist policing in an area.
- 4 x 4 clubs: these clubs are often used by the SAPS to access areas that would otherwise be difficult without the proper equipment or vehicle.
- Financial institutions: banks may be contacted by the SAPS to obtain financial information on a suspect, which may aid in the investigation.
- Interpol: aids with international cooperation during an investigation, if the need arises.
- International/local service providers: some departments within the SAPS require specialised equipment or software in order to perform their operational duties, e.g. the Ballistics Section makes use of the IBIS, Facial Identification Section uses software to create facial composites, etc. The service providers of the equipment or software may liaise with the SAPS to maintain the equipment or provide training to the SAPS members regarding the utilisation of the software.

4.5 PHASE 3: TRIAL AND SENTENCING

Finally, the trial and sentencing phase entails the steps taken by investigators to ensure a conviction and prison sentence for the offender. This relies heavily on court proceedings, evidence and expert testimony. Respondents cited IPS behavioural analysis evidence, testimony of experts, confessions and proper processing of the crime scene/maintaining chain of evidence as the main methods of linking cases during the trial and sentencing phase to convict the serial murderer. The case study below gives a condensed version of events that transpired during the investigation of the case and further discusses the importance of case linkage methods with regard to the trial and sentencing phase of the investigation.

4.5.1 Case study: the West-End serial killer (*S v Mogale [2011]*)

In 2008 and 2009, the bodies of 15 deceased adult black females and one deceased child (16 victims in total) were found in the Westonaria, Lenasia and Venterspos areas. Thirteen of the murders in the Westonaria and Lenasia areas were found to have occurred in close proximity to each other and the two bodies found in Venterspos were also found near each other. In 13 of the cases, evidence indicated that the suspect used his hands to manually strangle the victims. The suspect also used weapons found at the crime scene such as pieces of the victims' clothing (used as ligatures in 11 of the 13 murders previously mentioned), a brick or a sharp object. Blunt force trauma occurred in four of the cases. Fourteen of the cases indicated a sexual theme as the victims were partially naked and some had evidence of vaginal and/or anal rape.

A Task Team of Detective Service members and IPS members was formed to investigate the case. In March 2009, a woman survived an attack by the suspected serial murderer. She aided authorities with a facial identification description of the offender and a description of the vehicle he was travelling in. The Westonaria Traffic Department was contacted by SAPS members to monitor traffic cameras for the movement of the suspect. An informant, who was tasked to be on the lookout for the car described by the victim in the area, identified the vehicle and notified the SAPS, who then arrested the suspect. The suspect confessed to some of the murders, but not all. Former member of the IPS, Gérard Labuschagne, compiled a linkage analysis report on the cases and the similar fact evidence was accepted by the court. The accused, Madumetja Jack Mogale, was found guilty of nine kidnappings, 19 rapes, 16 murders, one attempted murder, three robberies with aggravating circumstances, a fraud or theft charge, an assault with intent to cause grievous bodily harm, a sexual assault and an escape from lawful custody charge. He was sentenced to 16 life sentences plus 23 years which are to run concurrently, without the possibility of parole.

4.5.1.1 Discussion

The following case linkage methods within the trial and sentencing phase of a serial murder investigation are elucidated below:

- a) IPS behavioural linkage analysis: former member of the IPS, Gérard Labuschagne's, findings verified that the murders were committed by the same offender based on the geographical location of the bodies found, the sexual theme of the murders, the presence of ligatures around the victims' necks, the signature and victimology.
- b) Testimony of experts: various experts testified on evidence found, which led to the conviction of the offender.
- c) Confessions: the suspect confessed to some of the murders. This, in conjunction with the linkage analysis report, led to the accused being convicted of 52 of the 60 charges laid against him.

The victim who survived the attack on her by the offender positively identified Jack Mogale as her attacker during an identity parade. An identity parade is a process by which a victim or a witness's putative identification of a suspect within a line-up is confirmed to a level that can count as evidence in court. The victim/witness visually identifies the suspect from a line-up of many people (Omar, 2009:71). Further case linkage methods to aid an investigation in terms of the trial and sentencing phase will be discussed below with regard to the respondents' interview sessions.

4.5.2 Interviews

Responses given by the respondents regarding case linkage methods that fall within the trial and sentencing phase are given below (Matrix 3):

Matrix 3: Trial and sentencing phase

TRIAL AND SENTENCING PHASE				
Respondent	IPS Linkage Analysis	Testimony of Experts	Confessions	Processing of Crime Scene/Chain of Evidence
1	X	X		
2	X	X		
3	X	X		
4	X	X		
5		X	X	
6		X		
7	X	X		X
8		X		X
9		X		
10	X	X	X	X
11	X	X		
12	X	X		X
13		X		
14	X	X		
15	X	X	X	
16				
17				
18		X		
19				
20	X	X		
21	X	X		
22		X		
23	X	X		

Source: Compiled by the researcher.

Respondents' replies regarding case linkage methods during the trial and sentencing phase of a serial murder investigation were as follows:

- IPS behavioural linkage analysis (13 out of 23 respondents);
- Testimony of experts (20 out of 23 respondents);
- Confessions (three out of 23 respondents);
- Processing of crime scene/chain of evidence (four out of 23 respondents).

4.5.2.1 IPS behavioural linkage analysis

Behavioural linkage analysis is used to assist investigators in determining whether or not a series of crimes was committed by the same offender. It is relied upon in the absence of physical evidence, such as DNA or fingerprints, or when no eye-witnesses come forward. In court, behavioural linkage analysis can be used to help identify an accused as the perpetrator of the series of crimes. Behavioural linkage analysis involves the following (Ellingwood, 2012:3-4):

- gathering information about the crime;
- reviewing the information about the crime and individualising features of each crime;
- identifying consistencies across the crime series; and
- compiling a written analysis describing the conclusions drawn.

The importance of the IPS linkage analysis was illustrated by the presentation of evidence in the Pietermaritzburg High Court during the trial of the 'Newcastle Serial Murderer' by a former member of the IPS, Gérard Labuschagne. Labuschagne was contacted to aid the investigation shortly before the arrest of the suspect. After consultation with the investigating officer of the murder series, Labuschagne suggested that the offender be charged with all the crimes in the series and that he could give evidence in this regard. He compiled a linkage analysis report using data collected from the following sources (Labuschagne, 2006:188-189):

1. Consultations with the investigating officer;
2. Visits to the crime scenes;
3. Plotting the crimes scenes on a GPS and overlaying this on a high altitude photograph of the area;

4. Examination of police dockets (crime scene photographs, autopsy reports and photographs and affidavits);
5. Interview with the first rape victim;
6. Experience with regard to serial murder investigations; and
7. Literature review of serial murder, linkage analysis and signature analysis.

The compilation of the linkage analysis report stated the following key points as a basis for the same offender having committed all four crimes (Labuschagne, 2006:189-190):

- Tools used to commit the crimes;
- Cause of death (head trauma);
- Method of victimisation (sudden attack);
- Sexual theme;
- Signature;
- Time of the crime (at night);
- Geographic locations of the crimes form a pattern; and
- Type of victim (victimology).

After presenting this evidence in court, the offender was found guilty on all charges and received five life sentences.

“The linkage analysis examined the circumstances of the crime, modus operandi, and signature behaviour of the offender, to come to the conclusion that all the offences were committed by one individual, despite the lack of eyewitness or forensic evidence linking the suspect to two of the four incidents. This evidence was admitted by the court and the presiding officer concurred that the accused was guilty of committing the crimes during the third and fourth incidents” (Labuschagne, 2006:183).

4.5.2.2 Expert testimony

Section 274(1) of the Criminal Procedure Act 51 of 1977 provides that, before a court makes an informed decision, evidence that the court deems necessary may be received. Opinion evidence is generally inadmissible in a court of law; witnesses can only give evidence on facts they have themselves witnessed. An exception to this rule is expert opinion, as the knowledge of the expert falls within a specific scope of expertise that qualifies the expert to inform the court on that subject. The presiding officer of the court must be convinced through the expert's *curriculum vitae* that the witness is qualified to testify as an expert witness. The expert may also be required to complete a report or affidavit on the findings and/or evidence. This report will include the expert's rationalisations and/or analyses upon which the expert opinion is based (Van der Hoven, 2006:158-159).

Nineteen out of the 23 respondents testify regularly in South African courts on their role in an investigation. Respondent 6 does not testify in court. Respondents 16, 17 and 19 are employed at the DNA Database component of the Biology Section of the FSL. They are not necessarily required to testify in court as their function is associated with the DNA Serials Team (also a component of the Biology Section of the FSL) whose members are specifically requested to testify in court on any findings regarding DNA case linkages in serial murder investigations.

Omar (2009:78) identifies a problem that hinders legal proceedings in terms of testimony by police members. Various police members are required to testify in court about their investigations but are afraid to take the witness stand because they fear aggressive cross-examination by the defence. Many police members are not trained to perform in a court setting and this may ultimately harm the case in terms of securing a conviction.

4.5.2.3 Confessions

According to Swanson, Chamelin and Territo (2016:1), the objectives of an interrogation are to:

- a) obtain facts;

- b) eliminate innocent persons;
- c) identify guilty parties; and
- d) obtain a legally admissible confession.

Respondent 5 was of the opinion that investigators must be skilled in interrogations as confessions are integral to gaining a conviction in court. If a suspect voluntarily confesses to a crime and the information acquired from an interrogation is corroborated by physical evidence, then a conviction of the accused is imminent (barring any other legal complications). Pistorius (2005:9) is of the opinion that “the better the interrogator understands the suspect, the more likely he is to confess”.

A confession is an indisputable admission of guilt which, if made in court, would amount to a plea of guilt. Labuschagne (2006:188) points out that a confession made to a member of the SAPS, must be to commissioned officer; if made to a non-commissioned officer, the confession may be inadmissible in court. According to Section 217 of the Criminal Procedure Act 51 of 1977, a confession may, in addition to a commissioned officer of the SAPS, also be made to a magistrate or justice. A confession must be made voluntarily by a person of sound mind without having been unduly influenced in order to be admissible in court (South Africa, 1977:115). Often, due to the lack of physical evidence at serial murder crime scenes, the conviction of the offender relies on his confession (Pistorius, 2005:9).

In some cases, the confession of the suspect includes a pointing out the crime scenes or body dump sites. This information is only known to the offender and thus valuable evidence in court (Pistorius, 2005:9). Pointing out of a crime scene is legally an admission by conduct; this physical indication or suggestion to evidence can be incriminating for the suspect. Section 218(2) of the Criminal Procedure Act 51 of 1977 states that anything pointed out by a suspect is admissible as evidence in court (South Africa, 1977:115).

4.5.2.4 Processing of crime scene/chain of evidence

The precise, consistent and efficient collection and preservation of physical evidence is the obligation of crime scene management with legal action being the goal (Omar,

2009:59). Respondents 7, 8, 10 and 12 asserted that proper processing of a crime scene, thorough documentation of the scene, correct methods of collection of evidence and chain of custody of evidence is important during the trial and sentencing phase of an investigation. The respondents emphasised that, if the accused was acquitted of charges due to a technicality related to the processing of the crime scene or chain of evidence, it would be a miscarriage of justice.

Omar (2009:77) concurs that maintenance and custody of the chain of evidence is an area of concern within the SAPS at station level. She offers evidence of collection kits not being stored in a cool place, or the kits not being sent to the FSL timeously as examples. It is the responsibility of the SAPS to preserve the chain of evidence and safeguard against contamination of exhibits.

4.6 CONCLUSION

Even though the SAPS has advanced forensic capabilities, including two forensic DNA laboratories, circumstances under which a crime is committed may make standard linking methods (such as DNA, fingerprints, or ballistics) unavailable, or results may take an extensive period of time (Salfati et al, 2014a:23). The information gained from this review of case studies and interview responses provides insight into serial murder in terms of analytical aspects that need to be focused on to achieve an investigative goal. For example, in order to determine if various crimes are linked as one murder series, the investigator would need to concentrate on examining the MO, signature, geographical aspects and victimology of the crimes. When considering a certain suspect as the perpetrator of these crimes, evidence in the form of DNA, fingerprints, ballistics, cell phone analysis or offender profiling would need to be collected. During the trial, evidence must be legally obtained and presented to the court to ensure a conviction of the offender. An impeccably investigated case will not necessarily lead to a conviction if the prosecution is flawed. Equally true, a flawless prosecution will lead to an acquittal of the charges against the accused if the investigation did not uncover enough evidence to prove the case beyond reasonable doubt. One is only as good as the other and these aspects rely upon each other to ensure a conviction in court (Schönsteich, 1999:2).

The categorisation of case linkage methods into three phases, namely the identification phase, the investigation and apprehension phase, as well as the trial and sentencing phase allows for the detailed analysis of case linkage methods that are classed into each phase and makes for a better understanding of a serial murder investigation. Case linkage methods that were not utilised within the case studies discussed, were identified during the interview sessions with respondents and further examined. In this Chapter, case linkage methods as knowledge gained from the examination of case studies and interview sessions with respondents were deliberated. During interview sessions, some respondents expressed dissatisfaction with certain aspects related to case linkage methods and made some valuable suggestions; these will be discussed in the next Chapter.

CHAPTER 5: FINDINGS AND RECOMMENDATIONS

“Though force can protect in emergency, only justice, fairness, consideration and cooperation can finally lead men to the dawn of eternal peace” (Eisenhower, 1947:89).

5.1 INTRODUCTION

Law enforcement agencies investigating complex cases such as serial murder face unique challenges with regard to the many motivations for this type of crime. When the serial murderers’ motivations change from case to case, the task of linking multiple victims to the same perpetrator becomes demanding (Morton et al, 2014:61). The information collected by law enforcement agencies on crimes, victims and offenders are seldom collated into practical statistical data. In terms of serial murder, a good practice would be to establish data collection systems that record and standardise information received from police reports to ensure adequate documentation. This system can then be used for operational and strategic planning to guide police work, to aid and support criminal investigations and to prevent homicides by identifying influential and enabling factors of the crime (UNODC, 2013:108).

In this Chapter, findings from the interview sessions with respondents regarding problems encountered during a serial murder investigation, suggestions to improve current case linkage methods and important elements to consider when investigating a murder series are discussed. Recommendations based on the findings are given by the researcher to aid the SAPS with streamlining the process of investigating a serial murder case.

5.2 PROBLEMS AND SUGGESTIONS RELATING TO CASE LINKAGE METHODS

Respondents who are part of the IPS and the Detective Service environment were probed to disclose any problems that they had with any case linkage methods (or

anything relating to case linkage methods) that they were aware of, as well as any suggestions they may have to improve or enhance current case linkage methods.

Respondents who are part of the Forensic Services environment were questioned about the type of linkage system they use (whether automated, semi-automated or manual), any problems they experienced within their field that may hamper case linkages being made, as well as any improvements they could suggest to better improve the system or working environment to make their functions more efficient. Common themes were identified from their responses and a discussion regarding this follows. The problems respondents identified were not all directly related to their suggestions and may be mutually exclusive. Their accounts are as follows:

Table 3: Problems and suggestions

IPS AND DETECTIVE SERVICE MEMBERS		
Resp- o- n- d- e- n- t	Problems	Suggestions
1	<ul style="list-style-type: none"> a) Lack of SOP in place to aid case linkages. b) Difficulty to contact certain departments for feedback on evidence. c) Lack of communication between SAPS departments. d) Lack of human resources (capacity). 	<ul style="list-style-type: none"> a) SOP for investigative methods to aid case linkages. b) Faster processing of exhibits. c) Following policy when it is in place and using best practices for investigations.
2	<ul style="list-style-type: none"> a) Lack of communication between SAPS departments. b) Specialised units were disbanded. c) IPS should always be involved in any serial murder investigation and lead detective should have training in Psychologically Motivated Crimes. 	<ul style="list-style-type: none"> a) Better communication between SAPS departments. b) Reinstate specialised units.
3	<ul style="list-style-type: none"> a) Specialised units were disbanded. b) Human error in investigations. c) Pressure from higher ranks and the media to solve a serial case quicker leads to mistakes being made in 	<ul style="list-style-type: none"> a) Reinstate specialised units – when these units were closed, expertise was lost. b) Increase awareness of SAPS departments that can be

	<p>the investigation.</p> <p>d) Lack of awareness of SAPS departments that can be utilised during a serial murder investigation</p>	<p>utilised during a serial murder investigation.</p>
4	<p>a) DNA process and report takes too much time.</p>	<p>a) Biology Section should implement a quicker way to link a suspect to a murder series.</p>
5	<p>a) Lack of SOP in place to govern serial murder investigations.</p> <p>b) Misconceptions about sexual motives occurring in all serial murder cases could divert an investigation.</p> <p>c) When a serial murder case becomes high profile, many different SAPS departments are sent to the crime scene. This hampers the investigation and increases contamination of evidence risk.</p>	<p>a) Need for SOP in place to govern serial murder investigations.</p> <p>b) LCRC should be trained in Psychologically Motivated Crimes for serial murder investigations.</p> <p>c) Docket analysis must be conducted regularly.</p> <p>d) Information given to station level detectives about how/whom to report serial murder cases to (awareness).</p> <p>e) Crime intelligence at local station level should be sensitised to making case linkages.</p> <p>f) Need for a Database system like ViCAP in SA.</p> <p>g) Better communication between SAPS departments.</p>
6	<p>a) Lack of awareness for tools at SAPS' disposal to aid case linkages, such as geographic profiling software.</p>	<p>a) Need for more awareness in SAPS regarding tools at SAPS' disposal to aid with case linkages.</p>
7	<p>a) Specialised units were disbanded and expertise was lost.</p> <p>b) Lack of communication between SAPS departments.</p> <p>c) Lack of awareness of SAPS departments that can be utilised during a serial murder investigation.</p> <p>d) No proper processing of crime scene.</p> <p>e) Lack of expertise at clusters to make case linkages.</p>	<p>a) Reinstate specialised units.</p> <p>b) Better communication between SAPS departments.</p> <p>c) Increase awareness of SAPS departments that can be utilised during a serial murder investigation.</p> <p>d) Detectives should specialise in specific case types at station level.</p> <p>e) Coordination at clusters to make case linkages.</p>

8	<ul style="list-style-type: none"> a) Detectives are not qualified or are lacking in experience. 	<ul style="list-style-type: none"> a) Better communication between SAPS departments. b) Further community policing involvement.
9	<ul style="list-style-type: none"> a) Up-to-date software needed at SAPS departments that use specialised software. b) Lack of personnel capacity. c) SAPS Management does not allocate resources correctly. 	<ul style="list-style-type: none"> a) More members at provincial and national investigating units should be trained in Psychologically Motivated Crimes for serial murder investigations. b) A database system in place may aid case linkages. c) Need to capacitate sections in terms of personnel.
10	<ul style="list-style-type: none"> a) It is not easy to investigate a serial murder case many years after the crimes were committed. 	<ul style="list-style-type: none"> a) Implement a team that specifically visits stations to analyse case dockets to make linkages (docket analysis).
11	<ul style="list-style-type: none"> a) Docket analysis is rarely done. b) Lack of communication between SAPS departments. c) Detectives rush to complete a docket and do not give necessary attention to details. 	<ul style="list-style-type: none"> a) Docket analysis must be conducted regularly. b) Detectives should specialise in specific case types at station level. c) Better communication between SAPS departments.
12	<ul style="list-style-type: none"> a) Lack of communication between SAPS departments. b) Docket analysis rarely done/done incorrectly. c) Inexperienced detectives. d) Detectives often do not accept help from more experienced detectives because of conceit and a need for recognition. 	<ul style="list-style-type: none"> a) Detectives should be trained in Psychologically Motivated Crimes for serial murder investigations. b) Increase awareness of SAPS departments that can be utilised during a serial murder investigation. c) Delegate more tasks in a serial murder investigation to less experienced detectives, as this is a good teaching technique for them to gain experience.
13	<ul style="list-style-type: none"> a) Lack of SOP in place to govern serial murder investigations. b) Lack of awareness of SAPS departments that can be utilised during a serial murder investigation. c) Lack of communication between 	<ul style="list-style-type: none"> a) Detectives should be trained in Psychologically Motivated Crimes for serial murder investigations. b) Increase awareness of SAPS departments that can be utilised during a serial murder

	SAPS departments.	investigation (especially CSM). c) Information given to station level detectives about how/whom to report serial murder cases to (awareness).
14	a) Lack of awareness of SAPS departments that can be utilised during a serial murder investigation.	a) Increase awareness of SAPS departments that can be utilised during a serial murder investigation. b) Information given to station level detectives about how/whom to report serial murder cases to (awareness).
15	N/A (no problems stated)	a) Need for experts from various law enforcement fields to form part of the Task Team assembled for serial murder investigations.

FORENSIC SERVICES DIVISION MEMBERS

Resp- ondent	System	Problems	Suggestions
16	DNA – Semi-auto	a) Network issues slow down a system. b) Technicians are needed to maintain the system.	a) New, web-based software is needed. b) Integrated system implemented to include CRIM, CAS, FSL and Admin systems.
17	DNA – Semi-auto	a) Network issues slow down a system. b) Technicians are needed to maintain the system.	a) New, web-based software is needed. b) Integrated system implemented to include CRIM, CAS, FSL and Admin systems. c) Need for software that can run familial searches for missing persons/found remains purposes.
18	DNA – Semi-auto	a) DNA Database does not investigate mixtures (spurious hits). b) DNA analysis is a reactive method of case linkage – a crime must have been committed to	a) Increase personnel capacity for Biology section and DNA Serials team. b) Currently 10 areas of DNA strain are analysed, need to increase this to 16 areas for more accuracy of DNA

		<p>get a hit (not preventative).</p> <p>c) Slow response of the system due to the volume of cases.</p> <p>d) Human error – an analyst must load DNA profiles onto the system with the correct information.</p>	<p>linkages.</p> <p>c) The DNA kit used to collect DNA samples needs to be made more sensitive to collect smaller samples.</p>
19	DNA – Semi-auto	N/A (no problems stated)	<p>a) The DNA Database should be enhanced to support verification, reporting and managing follow-ups.</p> <p>b) Enhancements to the SAPS Legacy system to support follow-ups/investigations.</p> <p>c) Integrated database (VECTOR) is currently being implemented for detectives to voluntarily contribute data like MO, forensic leads, suspect information, victim information, or possible links to other crimes. This system will be similar to ViCAP, but not yet on that scale.</p>
20	DNA – Semi-auto	<p>a) The Biology Section is still amassing DNA samples to build a comprehensive database. A database is only as effective as the number of samples it has. Thus, the more samples collected, the more effective the system.</p>	<p>a) Need for increased personnel capacity to manage the system (especially in terms of expungement of old samples that must be removed from the system).</p>
21	DNA – Semi-auto	<p>a) Need for increased personnel capacity due to the high volume of cases received.</p> <p>b) Continuous system upgrades to ensure effective software.</p>	<p>a) Increases personnel capacity at the Biology Section.</p>

22	Facial ID – Manual	a) Not many specific features for the Coloured race.	a) Cognitive interviewing skills of the members must be up to international standards.
23	Facial ID – Manual	<ul style="list-style-type: none"> a) People in rural areas are scared of technology. b) Logistical problems: No charging capabilities in rural area for electronic devices. c) No portable internet devices are given to members to use. d) Lack of personnel capacity. e) No privacy in police stations to conduct interviews with witnesses. f) Lack of awareness by the Detective Service. 	<ul style="list-style-type: none"> a) Upgrades to software. b) More resources available to conduct interviews (logistics). c) Raise awareness about Facial Identification as a support section. d) Need for a private office at police stations to conduct interviews with witnesses. e) Have detectives inform Facial Identification section about the outcome of linkages made by them.

Source: Compiled by the researcher.

5.2.1 Common themes derived from the problems identified

A common problem identified by respondents from the IPS, the Detective Service as well as Forensic Services members is a lack of awareness amongst investigating officers regarding the SAPS departments that can be utilised during a serial murder investigation to aid the investigation. For example, investigating officers may overlook the need for Crime Scene Management or the Ballistics Section to be summoned to a crime scene due to various factors. This may be because they do not understand the functions of these departments and how they could provide assistance at a crime scene, or simply because they are unaware of the existence of these departments. In conjunction, respondents also pointed out that a problem may exist at station level where investigating officers who identify a murder series may not be aware of the procedure to follow when this type of crime is committed within their jurisdiction. They might not know whom to report it to, or how to procure the aid of other SAPS departments for further assistance.

Many respondents recognised that many specialised units, such as the Murder and Robbery Units, the Anti-Corruption Unit and the South African Narcotics Bureau were disbanded and the SVC and FCS Units decentralised to local stations as part of the restructuring of the SAPS in 2000 and 2006. These respondents are of the opinion that much of the expertise in investigating specialised crimes, like serial murder, was lost when the specialised units were disbanded or decentralised. A further problem identified by the respondents that requires further scrutiny is an apparent lack of experience and/or training of some investigating officers. Certain respondents are of the opinion that some investigating officers are inexperienced with investigating particular types of crime and this may hinder the successful conclusion of a case.

Other problems recognised by the respondents, such as the lack of Standing Operating Procedure, lack of docket analysis performed at stations, and the lack of sharing of information between members and/or departments have previously been discussed as challenges facing the SAPS.

5.2.2 Common themes derived from the suggestions made

Respondents proffered suggestions to combat some of the problems identified, and common suggestions included increasing awareness from station level upwards regarding SAPS departments that can be utilised during a serial murder case as well as the procedure to follow when a murder series is identified.

Reinstating specialised units will require fundamental changes to SAPS policies. The reason respondents suggested this option was that, in their opinion, reinstating specialised units would result in expertise and experience in investigating specific types of crimes being developed again and shared with less experienced investigating officers in the future.

The suggestion of better communication between SAPS members and departments would result in better working relationships and information being shared about investigation methods and case linkages, among others. Forensic Services members cited the lack of communication as a main problem for them. Once the Forensic Services members have completed their examination of the physical evidence and

dispatched a report on the findings, they rarely hear about the outcome of the case from the investigating officer. Linkages are missed because different investigating officers may investigate different murders that may be linked as one murder series perpetrated by one offender as offenders may not stay in the same station jurisdiction and there is no communication between the stations. Omar (2009:81) concurs that Station Commissioners are responsible for ensuring that dockets are inspected regularly to confirm a quality investigation is being conducted. These Commissioners must also be held accountable for the lack of coordination and communication between members.

Perhaps the most important suggestion furnished by the respondents, is that all investigating officers at station, provincial and national levels as well as selected LCRC members should attend the Psychologically Motivated Crimes training course presented by the IPS. This course aims to give investigating officers insight and specific training in investigating psychologically motivated crimes, of which serial murder is a part. This training is given freely in South Africa by the IPS and can only benefit the SAPS.

A few respondents expressed the need for an integrated database system (similar to the USA's ViCAP) which may benefit the investigation of serial murder cases. However, many challenges face computerised case linkage systems. These have been discussed in Chapter 3.

5.3 SOUTH AFRICA-SPECIFIC ISSUES EXPERIENCED DURING A SERIAL MURDER INVESTIGATION

When questioned about problems experienced during and suggestions to improve methods of case linkage, some respondents pointed out issues that may be encountered during a serial murder investigation. These issues pertain specifically to a serial murder investigation being conducted in South Africa and include the following:

- Respondent 1 stated that, since most serial murderers commit murders and/or dump bodies in the veld (or isolated open bush areas), it is unlikely that an

investigator will find fingerprints, thus making it more difficult to link cases in this way.

- Respondent 1 also stressed that DNA being used as a case linkage method within the investigation and apprehension phase is dependent on an offender being apprehended and a confirmation DNA sample being sent in for analysis. If the offender is not arrested, DNA can only link cases to each other and not to an individual.
- Respondents 2 and 5 stressed the importance of ‘runners’ to be involved in a serial murder investigation. ‘Runners’ are local detectives from station level who know the area in which the murders were committed and speak the local language/dialect and can aid the investigation by locating potential suspects faster than a detective who does not know the area. Especially when a potential suspect resides in a township that does not use a house numbering address system, ‘runners’ would know the system in the area and be able to guide the lead detective to the potential suspect’s residence much quicker. This saves time in an investigation where time is of the essence.
- Respondent 5 further elaborated that a lack of SOP governing a serial murder investigation contributes to contamination of a crime scene. When there is no SOP, there is no protocol in place for the specific departments needed on the crime scene (Forensic Services, Crime Scene Management and/or LCRC). As it is currently uncoordinated, a SOP would regulate the departments requested to attend the crime scene and the lead detective of the investigation would call in departments in the order in which they are needed.
- Respondent 5, as an experienced investigator, ensures that crime scene photographers take photographs of the crowd gathered at a crime scene in addition to photographing the crime scene itself, as serial murderers often revisit the crime scene and might be in the crowd.
- Respondent 7 recognised a problem when a Task Team was formed months after a serial murder case had been identified. He asserted that a Task Team is generally only formed when the case becomes a ‘high profile’ matter. He defined ‘high profile’ as occurring when the serial murder case is featured in the media, when a large quantity of bodies is found to be attributed to the

same perpetrator or when one or more of the victims are recognised in society.

- Respondent 12 acknowledged the problem of unidentified victims as a hindrance to serial murder investigations because victimology information (especially the background of the victim), that could aid an investigation, is limited. Holland (2015:67) proposes reasons for victims remaining unidentified as: a large number of the South African population do not have valid identification documents, the victims could be foreign nationals who are in the country illegally and, as many people work far from their homes and do not have the resources to contact their families often, their families may be unaware of their disappearance.
- Respondents 16 to 21 belong to the Forensic Services Division, specifically the Biology Section. These members stated that it is possible to link cases using DNA evidence during their everyday official duties. A sample could be sent in and, once processed, the DNA profile is loaded and compared to all other cases on the DNA Database and if a 'hit' is made, the Biology Section will follow procedure to inform an investigating officer on the existence of a serial murder case.

Due to homicide and serial murder rates in South Africa being the highest in Sub-Saharan Africa and in the world (Salfati & Labuschagne, 2015:1), the researcher thought it pertinent to have discussed the issues experienced by some investigating officers, i.e. the respondents in the study, within a context that is specific to South Africa.

5.4 IMPORTANT ELEMENTS TO CONSIDER WHEN INVESTIGATING A CASE OF SERIAL MURDER

Even though guidelines are in place for the manner in which a case should be investigated, every investigator has his/her own system of investigation. As members of the Forensic Services Division are not usually involved in a serial murder investigation beyond the forensic examination of the evidence, only members of the Detective Service and the IPS were questioned about the most important element(s)

they thought were essential to solving a serial murder case. Their responses were as follows:

- Respondent 1 – knowledge of how to investigate a case of serial murder correctly and how to utilise resources as techniques become useless if the investigating officer does not have the knowledge to use them.
- Respondent 2 – the docket (case file) must be properly collated and all relevant information contained therein, as the docket is essential for court purposes and ensuring a conviction.
- Respondent 3 – a dedicated investigating officer, who will perform all the necessary duties, and more, to investigate the case.
- Respondent 4 – dedication and time devoted to the case by the investigating officer, observation of the crime scene as the offender may return, and a Task Team should be formed for all cases of serial murder, not only selected cases.
- Respondent 5 – diligence. The case should become an investigator's obsession until it has been successfully closed.
- Respondent 7 – an open-minded investigating officer that explores all facets of a case.
- Respondent 8 – teamwork and good communication between all members involved.
- Respondent 9 – teamwork. All the SAPS departments that are involved should form part of the Task Team and work together.
- Respondent 10 – forensic DNA case linkages. This is the easiest way to have inimitable proof that a specific offender committed the crime(s).
- Respondent 11 – time is the most important element. The investigating officer cannot rush to complete the case; many mistakes are made in this way.
- Respondent 12 – as much information about the victim as possible: victimology, work, background, threat assessment and education, among others. This information will aid in understanding the offender and offer an advantage in apprehending him.
- Respondent 13 – an organised team leader/investigating officer who understands the importance of evidence and ensuring a conviction in court.
- Respondent 14 – a Task Team made up of the correct, dedicated role players.

- Respondent 15 – teamwork within all involved members and/or departments within the SAPS.

5.5 RECOMMENDATIONS

In a stranger-to-stranger murder, which is generally the case with serial murder cases, where there is no physical evidence or witnesses, the police are left with a large pool of suspects. Unless the serial murderer leaves a conspicuous or unique signature at the crime scenes, the murder series might go unnoticed by police (Egger, 1985:75-76). This author is renowned for his research on linkage blindness and cites the lack of sharing of information within law enforcement agencies as the main cause. Thus, the researcher is of the opinion that the sharing of information and better communication between the SAPS members, stations and departments could alleviate this problem of case linkages being missed. The sharing of crime information becomes complex when the criminal justice system involves many core functions, including community policing, crime prevention and investigation, prosecution, punishment and rehabilitation, to name a few. Therefore, a high priority among law enforcement agencies is the need to build information-sharing capacities, both technological and organisational (Grant & Terry, 2005:345).

The importance of technological advances cannot be ignored by law enforcement, especially with the advances in technological surveillance, GPS tracking, access to data and biometric and facial identification systems. However, the increasing reliance upon and availability of technologies to law enforcement brings with it new legal issues that particularly deal with the line between crime control and infringing on citizens' privacy (Grant & Terry, 2005:324-325). The importance of geographic profiling as a technological advancement, in the researcher's opinion, should not be overlooked. Grant and Terry (2005:331-340) agree by stating that the combined use of geography, psychology and mathematics to locate a serial murderer is a useful tool in any investigation. Application of geographic profiling is not limited to serial murder investigations and can be applied to crimes such as robbery, rape, arson, burglary and fraud. Using Geographic Information Systems (GIS) as a technological tool of geographic profiling offers law enforcement agencies an automated system for

the capture, storage, retrieval, analysis and display of spatial data. By visually displaying geographical data, GIS could allow for easier crime linkages.

In terms of the increasing awareness among investigating officers with regard to the SAPS departments that can be utilised to aid the investigation of a serial murder case, the researcher recommends that each SAPS department could prepare presentations regarding their functionalities and the crime scene scenarios they deal with and present these at stations and/or investigating units. The departments that could offer presentations in this regard include, but are not limited to: CSM, Forensic Science Laboratory Sections, Facial Identification and VIC. External organisations such as the CSIR, the Department of Health, the Department of Correctional Services and tertiary education institutions could also make presentations to the SAPS regarding their functions and usefulness when investigating a crime.

Further recommendations by the researcher include the need for docket analysis to be conducted at all the SAPS stations and a system to be implemented to monitor that this is being accomplished, as well as the need to implement and enforce a SOP that governs the system of investigation of a serial murder case. Both of these recommendations, if instigated correctly and applied continuously, would allow for more case linkages to be made and ensure a proper, consistent investigation occurs for every serial murder case.

The researcher believes that the most important recommendation that she could make regarding this study is to urge the SAPS management to consider allowing all investigating officers at local station, provincial and national levels, as well as selected members of the LCRC, to attend training given by the IPS on Psychologically Motivated Crimes. Not only will this training provide useful knowledge and insight into crimes that are committed with a psychological motive, but it will also educate investigating officers on the proper criminal justice system procedure to follow when such a crime is committed within their jurisdiction. The course includes components on human sexuality and the development of offenders, serial rape investigation, serial murder investigation, and the investigation and identification of other psychologically motivated crimes like sexual burglary, autoerotic fatality, stalking, intimate partner murders and muti murders (Omar, 2008:34-35).

It is additionally suggested by the researcher that further research into serial murder as well as case linkage methods be conducted within a South African context to allow for a better understanding of the phenomenon. Further research should include a larger quantity of serial murder cases to be studied to provide a more accurate representative sample. It is hoped that the understanding of case linkage methods relating to serial murder will lead to strategic measures being taken by the SAPS to preclude or diminish the incidence of serial murder in South Africa.

5.6 CONCLUSION

Crime amongst human beings occurs at all levels of society and exerts influence over all people. This means that each individual and police official involved in combating crime must continually adjust their methods and search for new, more effective ones. DNA is a powerful investigative tool due to the fact, with the exception of identical twins, no two people have the same DNA and, if left at a crime scene, it becomes a unique identification implement (Olivier, 2002:83-86). The Psychologically Motivated Crimes course presented by the IPS has been endorsed by high-ranking officials of the SAPS in the past and it has even been publicly stated that “every detective should attend this course” (Omar, 2008:35).

The ease with which law enforcement investigates and resolves a serial murder case is largely due to advances in forensic pathology, criminalistics and progressive investigative techniques. These developments should be directed at apprehending serial murderers. Steps should be taken at national and local policing levels to develop an effective system to aid law enforcement with the sharing of information (Egger, 1984:356). The author’s words, even though decades old, resound with the researcher in that she is of the opinion that it is as true today as it was then. Technology has advanced even further and, if applied correctly, could be an effective weapon in the fight against crime. Further studies into serial murder could expand the understanding of, and conceivably improve, investigations of this type of crime.

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ANNEXURE A
PERMISSION LETTER FROM THE SAPS

G.P.-S. 002-0222

SAP 21

SUID-AFRIKAANSE POLISIEDIENS



SOUTH AFRICAN POLICE SERVICE

Privaatsak/Private Bag X94

Reference Nr Verwysing	3/34/2
Navrae Enquiries	Col J Schnetler Lt-Col GJ Joubert
Telefoon Telephone	012-393 3177/3118
Faksnommer Fax number	012-393 3178

**STRATEGIC MANAGEMENT COMPONENT
HEAD OFFICE
PRETORIA**

The Divisional Commissioner
FORENSIC SERVICES

(Attention: Brig Labuschagne)

The Divisional Commissioner
DETECTIVE SERVICE

(Attention: Lt Col Stassen)

**RE: RESEARCH REQUEST: INVESTIGATING SERIAL MURDER: LINKAGE ANALYSIS
METHODS OF THE SOUTH AFRICAN POLICE SERVICE; MASTERS DEGREE: UNISA:
RESEARCHER: P GOVENDER**

1. The research proposal of Sergeant Pariksa Govender, pertaining to the above mentioned research proposal, refers.
2. The purpose of the research is to determine the linkage analysis methods (the linking of cases to each other and to the perpetrator) of the SAPS and to explain these methods in order to gain better perspective of serial murder investigations in South Africa.
3. The study will apply a qualitative approach with a multi-method data collection process which includes docket analysis, interviews and literature review. The target population for the study will include members of the Investigative Psychology Section and other SAPS members involved with the investigation of serial murders.
4. This office recommend that the docket analysis be limited to closed dockets only and with the permission of the relevant line functionary. The contents of these dockets should be treated highly confidential.
5. The proposal was perused according to National Instruction 1 of 2006 by this office and it is recommended that permission be granted for the research subject to the final approval and further arrangements by the offices of the Divisional Commissioner: Forensic Services and the Divisional Commissioner: Detective Service and that the undertaking be obtained from the researcher prior to the commencement of the research that –
 - 5.1 the research will be at his/her exclusive cost;

ANNEXURE A
PERMISSION LETTER FROM THE SAPS

RE: RESEARCH REQUEST: INVESTIGATING SERIAL MURDER: LINKAGE ANALYSIS METHODS OF THE SOUTH AFRICAN POLICE SERVICE; MASTERS DEGREE: UNISA: RESEARCHER: P GOVENDER

- 5.2 he/she will conduct the research without any disruption of the duties of members of the Service and where it is necessary for the research goals, research procedure or research instruments to disrupt the duties of a member, prior arrangements must be made in good time with the commander of such member;
- 5.3 if information pertains to the investigation of crime or a criminal case, the researcher must acknowledge that he, by publication thereof, may also be guilty of defeating or obstructing the course of justice or contempt of court;
- 5.4 the information will at all times be treated as strictly confidential and
- 5.5 he/she will donate an annotated copy of the research work to the Service and

With kind regards,



MAJOR GENERAL
HEAD: STRATEGIC MANAGEMENT
M MENZIWA

Date: 2014/10/03

ANNEXURE B
INFORMED CONSENT LETTER

Dear Sir/Madam

I, Pariksha Govender, an MA (Criminology) student at the University of South Africa, am presently engaged in a research undertaking entitled “INVESTIGATING SERIAL MURDER: CASE LINKAGE METHODS EMPLOYED BY THE SOUTH AFRICAN POLICE SERVICE” under the supervision of Professor H. Fouché of the Department of Criminology.

The stranger-on-stranger nature of serial murder and the apparent lack of motive leaves investigators with a large pool of suspects and a lack of evidence which makes it difficult to identify a serial murderer let alone apprehend him/her. The objective of this study is firstly to determine the case linkage methods that the South African Police Service employ to link serial murder cases (case to case as well as to the offender); and secondly to explain these methods and/or techniques and assuming there are opportunities for enhancement of the linkage methods, to present recommendations that could possibly improve it.

In order to complete this study, I must conduct interviews with members of the SAPS who have been involved in the investigation of serial murder cases and the linking of cases in South Africa. These interviews will be documented by means of note-taking and a tape recording device and will take approximately 45 minutes. Participating in this study means you consent to being interviewed with regard to the investigation of serial murder cases and your role therewith. You reserve the right to withdraw from the study at any time and are under no obligation to participate. The confidentiality of your answers will be maintained and your anonymity preserved. No compensation will be given for participation in the study. Queries can be directed to GovenderPariksha@saps.gov.za.

The direct benefit of this study is that understanding case linkage methods can help law enforcement managers justify the allocation of resources needed to develop techniques and methods that aid in the linking of crimes. South African communities will in turn benefit from a more effective investigative service which will prevent serial murderers from operating indefinitely.

I have read the above and agree to voluntarily participate in the research study being conducted on case linkage methods employed by the SAPS to investigate serial murder in South Africa.

Signature: Participant

Date

Place

**ANNEXURE C
INTERVIEW SCHEDULE**

**MEMBERS OF THE SOUTH AFRICAN POLICE SERVICE THAT ARE/WERE
INVOLVED IN SERIAL MURDER INVESTIGATIONS**

SECTION A. BIOGRAPHICAL DATA FOR ALL RESPONDENTS

What is your full name?

What is your home language?

What rank do you currently occupy in the South African Police Service?

Which Section/Station of the SAPS are you employed at?

How many years of service do you have in the SAPS?

What is your highest qualification?

ANNEXURE C
INTERVIEW SCHEDULE

SECTION B. SEMI-STRUCTURED QUESTIONS FOR ALL RESPONDENTS

1. Have you ever been involved in a serial murder investigation?
2. How many serial murder cases have you been involved in investigating?
3. What role do/did you play in the investigation?
4. In what ways can a murder series be identified? Can you explain them?
5. What methods/systems/techniques are currently in place to aid in the investigation of a murder series to link the series to a specific offender?
6. What do these methods entail?
7. Do you experience any practical problems with any of these methods?
8. Do you have any suggestions as to improving any current case linkage methods that you use?
9. Have there been any recent improvements to investigative methods within your role with regard to case linkage?
10. Do you utilize other departments within the SAPS for serial murder investigations?
11. How do you feel about the use of other departments? E.g. are results given to you in a timely manner?
12. Are any outside resources (outside of the SAPS) used to assist in the serial murder investigation?

ANNEXURE C
INTERVIEW SCHEDULE

13. How do you feel about the use of outside resources?
14. Does your role in the investigation require you to testify in court?

SECTION C. FURTHER QUESTIONS FOR SAPS MEMBERS IN AN INVESTIGATIVE ROLE

15. Do you have any relevant training with regard to serial murder and its investigation?
16. Who is in charge of the investigation once a murder series has been identified?
17. What, in your opinion, is the most important element needed to solve a serial murder case?

SECTION D. FURTHER QUESTIONS FOR MEMBERS OF THE INVESTIGATIVE PSYCHOLOGY SECTION

18. Who is in charge of the investigation once a murder series has been identified?
19. Are you required to compile a profile/linkage analysis matrix on the offender for every serial murder investigation?
20. What data sources do you use for the offender profile/linkage analysis matrix?
21. Are you required to compile a report of your findings?
22. Do case linkage methods play a role in court?

ANNEXURE C
INTERVIEW SCHEDULE

23. What, in your opinion, is the most important element needed to solve a serial murder case?

SECTION E. FURTHER QUESTIONS FOR MEMBERS OF THE FORENSIC SERVICES DIVISION

24. Is it possible to link cases during the performance of your everyday official duties, or does a specific request need to be received?
25. What system of linking cases does your department employ? Is it manual or automated?
26. How does this system operate (what are its function(s) and how are the function(s) carried out)?
27. Is this system effective and efficient?
28. Do you experience any practical problems with the system?
29. Would you recommend any improvements to the system?
30. Are you required to compile a report of your findings?

ANNEXURE D
LANGUAGE EDITING CERTIFICATE

Barbara Shaw
Editing/proofreading services
18 Balvicar Road, Blairgowrie, 2194
Tel: 011 888 4788 Cell: 072 1233 881
Email: bmsshaw@telkomsa.net
Full member of The Professional Editors' Group

To whom it may concern

This letter serves to inform you that I have done language editing and reference checking on the following thesis:

Name: Pariksha Govender
Qualification: Master of Arts: Criminology
Title: **INVESTIGATING SERIAL MURDER: CASE LINKAGE METHODS EMPLOYED BY THE SOUTH AFRICAN POLICE SERVICE**
No of pages: 153 (excluding appendices)



Barbara Shaw

05 January 2017