
**A LEGAL ANALYSIS OF THE STUDY OF THE SCIENTIFIC EVIDENCE OF
DEOXYRIBONUCLEIC ACID (DNA)**

By

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DECLARATION

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I, **LIONEL DAVID HARRY**, declare that "**A legal analysis of the scientific evidence of DNA**" is my own work and that all sources I have used or quoted have been indicated and acknowledged by means of complete references.

(LD Harry)
SIGNATURE

08 October 2020
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ABSTRACT

This study analyses how DNA evidence can be distorted by the behaviour of criminal investigators and role-players within the Criminal Justice System (CJS). This has a negative impact on justice resulting in further criminality. The study has resulted in revelatory weaknesses owing to constitutional violations which cause sound evidence to become futile as it will not be admissible in court. Justice is aborted. The researcher has further explained the properties of the pertinent terms, such as: mental illness, psychosocial functioning, DNA, forensic investigator, forensic psychology, and courts.

Concepts are building blocks, hermeneutical distortion leads to the frustrating of what justice intends and this, in turn, leads to poor criminal investigation performance. It is submitted that not only ineptness, but also deception possibly evolves from genotypic to phenotypic type which causes unwelcome behaviour within the criminal justice system to surface. The frequency of monitoring psychological behaviour amongst criminal investigations is low, and it, therefore, also contributes to delict and the miscarriage of justice occurs.

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ABBREVIATIONS AND ACRONYMS

AFU:	Asset Forfeiture Unit
CD:	Conduct Disorder
CJS:	Criminal Justice System
CPF:	Community Police Forum
CSM:	Crime Scene Management
DNA:	Deoxyribonucleic Acid
EHW:	Employee Health Wellness
FICA:	Financial Intelligence Centre Act
FSL:	Forensic Science Laboratory
NFDD:	National Forensic DNA Database
NIJ:	National Institute of Justice
NWU:	North West University
PCR:	Polymerase Chain Reaction

PMG:	Parliamentary Monitoring Group
POCA:	Prevention of Organised Crime Act
PPE:	Personal Protective Equipment
PPAT:	Police Psychological Assessment Tool
PRECCA:	The Prevention and Combatting of Corrupt Activities
RFLP:	Restriction Fragment Length Polymorphisms
SAPS:	South African Police Service
SAQA:	South African Qualification Authority
SGB:	Student Governing Body
STR:	Short Tandem Repeats
US:	United States

TABLE OF CONTENTS

DECLARATION	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
ABBREVIATIONS AND ACRONYMS.....	v
CHAPTER ONE - GENERAL ORIENTATION	1
1.1 Introduction	1
1.2 Research Problem.....	3
1.3 Demarcation of the study.....	6
1.4 Research purpose	6
1.5 Research aim.....	6
1.6 Research objectives.....	8
1.7 Research questions.....	9
1.8 Key theoretical concepts	9
1.8.1 Mental illness.....	9
1.8.2 Courts	9
1.8.3 Forensic investigation.....	10
1.8.4 Crime scene	10
1.8.5 Expert witness.....	10
1.8.6 Criminal justice system.....	10
1.8.7 DNA.....	10
1.8.8 Ethics	10
1.8.9 Forensic psychology.....	11
1.8.10 Psycho-social	11
1.9 Research methodology	11
1.9.1 Research Design	12
1.9.2 Research approach	12
1.10 Population and Sample Procedure	12
1.11 Sampling techniques and procedure	13
1.11.1 The selection of SAPS Detectives.....	13
1.12 Data collection methods.....	13
1.12.1 In-depth Interviews	14
1.12.2 Non-Participative Observation.....	14

1.12.3 Focus-Group Interview.....	15
1.13 Literature Review.....	15
1.13.1 Primary Literature	15
1.13.2 Secondary Literature	16
1.13.3 Constitution of RSA.....	16
1.13.4 Law of Evidence Amendment Act.....	17
1.13.5 Case Law.....	17
1.14. Data Analysis and Interpretation.....	18
1.15. Trustworthiness of the Study.....	20
1.16 Ethical consideration.....	19
1.16.1 Permission to conduct the study	20
1.16.2 Informed consent.....	20
1.16.3 Anonymity and confidentiality.....	20
1.17 Summary.....	20
1.18 Research layout.....	21
CHAPTER TWO: ADMISSIBILITY OF DNA LEGISLATION & PSYCHOLOGICAL BEHAVIOUR WHEN USED AS EVIDENCE	22
2.1 Introduction	22
2.2 Key objectives of the DNA Act	28
2.3 Forensic DNA laboratories	29
2.3.1 DNA Profiling involves 5 steps	29
2.3.2 Basic elements of a DNA report.....	30
2.3.3 The Crime Scene.....	31
2.4 Psychological challenges.....	31
2.5 Management of mental health problems	34
2.6 Summary.....	35
CHAPTER THREE: PRESENTATION AND INTERPRETATION OF FINDINGS	37
3.1 Introduction	37
3.2 Presentation of the findings	37
3.2.1 Legal opinion with regard to subjecting SAPS experts to polygraph testing	38
3.2.2 The importance of SAPS to uncritically accept DNA evidence.....	38
3.3 Secondary findings.....	40
3.3.1 Admissibility of evidence	40
3.3.2 The behavioural characteristics of an effective forensic investigator.....	41
3.3.3 Management of DNA evidence.....	42
3.3.4 Integrity.....	43
3.3.5 Identification of DNA evidence	44

3.3.6 Understanding of DNA concept.....	45
3.3.7 Psycho-Social functioning of the forensic investigator.....	46
3.3.8 Locard Principle.....	47
3.3.9 DNA preservation	48
3.4 Summary	49
CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS	50
4.1. INTRODUCTION	50
4.2 SUMMARY OF THE RESEARCH METHODOLOGY	51
4.3 DISCUSSION OF THE RESEARCH FINDINGS.....	52
4.4 ESTABLISHING WHETHER CRIMINAL INVESTIGATORS BE SUBJET TO POLYGRAPHIC TESTING.....	53
4.4.1 Criminal investigators and legal experts be subject to polygraph test.....	53
4.4.2 SAPS to play an important role to uncritically accept DNA evidence	54
4.4.3 The admissibility of evidence	55
4.4.4. The behavioural characteristics of an effective forensic investigator	56
4.4.5 Management of DNA Evidence.....	58
4.4.6 Integrity.....	58
4.4.7 Identifying DNA Evidence	59
4.4.8 Understanding of DNA Concept.....	61
4.4.9 Locard Principle.....	62
4.4.10 DNA Preservation.....	62
4.5 DETERMINING PSYCHOLOGICAL ASPECT OF THE CRIMINAL INVESTIGATOR AND EXPOSURE TO PSYCHOLOGICAL ASSESSMENT TOOLS	63
4.5.1 Psychological Aspect of Criminal Investigator	63
4.5.2 Psychological Assessment Tools.....	63
4.6 RECOMMENDATIONS.....	64
4.6.1 Criminal Investigations to be Legal.....	65
4.6.2 Police Psychological Assessment Tool	66
4.6.3 Current psychological assessment tools used for criminal investigators	67
4.6.4 The need for skilled criminal investigators	68
4.7 RECOMMENDATIONS FOR FURTHER RESEARCH	68
4.8 CONCLUSION	69
LIST OF REFERENCES.....	70
ANNEXURE A: SAPS PERMISSION TO CONDUCT RESEARCH.....	82
ANNEXURE B: UNISA ETHICAL CLEARANCE	83

ANNEXURE C: EDITOR'S CERTIFICATE	85
ANNEXURE D: TURN-IT-IN-REPORT	86

CHAPTER ONE - GENERAL ORIENTATION

1.1 Introduction

Dr Warner Von Braun, the father of the space programme, said: “The natural laws of the universe are so precise that we do not have any difficulty in building a space ship, sending a person to the moon and we can time the landing with the precision of a fraction of a second.” Likewise laws regarding DNA evidence should be so precise that inculpatory and exculpatory evidence should not be blurred so that justice can prevail. The researcher comments that the relevance of Dr. Von Braun’s statement is about precision, which is very greatly needed in the legal world.

According to Omar (2008:29), “the allocated operational budget for the Criminal record and Forensic Science Service for 2006/2007 was R156 687 000 and an extra R36m [was] allocated for equipment.” This is a huge amount of financial resources which is wasted on sloppy and flawed DNA evidence management and presentation in court. The National Head Office, Criminal Record and Crime Scene Management, is located in Pretoria, South Africa. The focus of this study is to provide a legal analysis of the scientific study of DNA.

The South African Police Service has put into operation the Criminal Law (Forensic Procedures) Amendment Act (Act 37 of 2013), commonly referred to as the “DNA Act”. Buccal samples are taken only by SAPS personnel who have received prescribed training and are of the same gender, in a private place in the presence of a witness. Buccal samples taken from persons arrested and charged especially for Schedule 8 offences are linked to SAPS 76, noted by the President in the *Gazette* (South Africa, Amendment Act, Act 37 of 2013, 2014).

DNA evidence is a very potent piece of evidence which secures a conviction in a court of law. Such evidence, however, has been legally analysed to ensure that the probative value of scientific evidence does not give birth to the miscarriage of justice. Such mishaps cost the state millions of rands as well as resulting in human degradation. Money cannot buy dignity.

Dr. Edmond Locard noted that when two objects come into contact with each other there is a reciprocal transfer of tracks Muller & Saayman (2003:41). The researcher has proven that, although the 'Locard Principle' has been a major breakthrough in the presentation of biological evidence. This study analyses the scientific evidence of DNA, as it should always be critically tested, from an objective point of view, especially during crime scene management investigations. This study has raised an awareness of the need to exonerate the innocent and punish the guilty. Horrendous crimes cannot go unnoticed.

According to the Southern African Legal Information Institute (SALII), (2014), in the matter of *Mosethla & Others vs the State*, Basson in S v Chapman stated, "The Courts are under a duty to send a clear message to the accused, to other potential rapists and to the community. We are determined to protect the equality, dignity and freedom of all women, and we shall show no mercy to those who seek to invade those rights". The researcher emphasises that law enforcement agencies, such as SAPS, ought to take note of legal, psychological, psycho-social, criminal and socio-economic factors that could arise from allowing the innocent to be wrongly punished as well as the guilty going free.

According to SEYLII (2014), in R (on the application of Ali and others) v Secretary of State for Justice, fresh evidence revealed that the defendant was wrongly convicted, and, therefore, the state was to pay compensation for the miscarriage of justice to a person who suffered punishment owing to being convicted of an offence. The Supreme Court had to analyse cases using four categories:

1. Certainty that the defendant was innocent of the crime of which he had been convicted (as when DNA evidence showed that beyond doubt);
2. Where fresh evidence showed that the defendant had been wrongly convicted in the sense that, had the fresh evidence been available at the trial, no reasonable jury could properly have convicted;

3. Where fresh evidence was such that the conviction could not be regarded as safe, but the court could not say that no fair-minded jury could properly convict if there were to be a trial which included the fresh evidence; and
4. Where the conviction was quashed because something had gone seriously wrong in the investigation of the offence or the conduct of the trial, resulting in the conviction of someone who should not have been convicted.

The Supreme Court had held that miscarriage of justice under s 133 was a broader concept than category 1, and included category 2, which it had re-stated as: '[a] new fact will show that a miscarriage of justice has occurred when it so undermines the evidence against the defendant that no conviction could possibly be based on it', but it did not include categories 3 or 4.

1.2 Research Problem

Statistics of misconduct by Criminal Justice employees are not made public, but such conduct is noted in various case dockets and court cases which have been identified in Kwa-Zulu Natal Province. In *R. (Adams) v Secretary of State for Justice*, however, it was decided by a majority (five to four) that a miscarriage of justice had occurred within the meaning of s 133 not only where a new fact showed clearly that a defendant was innocent of the crime of which he had been convicted (cases described in *Adams* as category 1) but also in a second category of case (category 2).

According to the Minnesota Law Review (1992:703), Murphy states that "it is better to admit flawed testimony for what it is worth, giving the opponent a chance to expose its defects, than to take the chance of a miscarriage of justice because the trier is deprived of information". The South African legal system has a rule that hearsay evidence should not be admitted because it is potentially unreliable and prejudicial, and hearsay evidence is inadmissible unless it falls within a recognised existing exception. The researcher cautions that hearsay evidence is ambidextrous in nature, and, therefore, admittance should be allowed with extreme caution.

According to Andrew Paizes (2014), MyLexisNexis, in the South African Journal of Criminal Justice, “Many areas of the law seemed in dire need of a thorough re-evaluation, and yet the courts lacked the boldness to jettison outmoded ideas, refashion the law, and set it upon more principled foundations.” The researcher shares similar sentiments. The question, therefore, arises as to whether the conduct of employees within the South African Criminal Justice System choose to implement a reliable balanced standard to secure justice by utilising the scientific evidence of DNA?

There is a quantum need for the mitigation of dishonesty. Subjects were investigated to see to what extent their perception was regarding DNA evidence, and whether it was critically presented. The researcher cautions that the implementation of the scientific presentation of DNA ought to be evaluated to determine validity and reliability. Systematic clarification of the research progression will be made clear.

According to Ryan (2016), “....the advancements in DNA testing are overall fantastic and fascinating, the DNA analyst, investigator and prosecution must be aware of the limitations of the testing in determining how the trace of DNA evidence arrived,...touch DNA, could have arrived or been transferred via secondary transfer event”. My opinion is that DNA degradation occurs. Flawed forensic laboratory reports are detrimental to justice. Cozolino (2010:64) states that “our genetic information is coded in four amino acid bases (adenine, thymine, guanine and cytosine) that flow from DNA to messenger RNA (mRNA) to protein....identical twins with the same genes may differ in phenotype, that is why one becomes schizophrenic and the other does not”.

Cozolino (2010:64) questions as to what we inherit ‘phenotype’ or ‘genotype’ and proposes that phenotype is guided by non-coded genetic information which is experience dependant. This includes toxic exposure, a good education, high levels of stress to feast or famine. Template genetics guide the formation of the brain, but gene development guides long-term development in reaction to the adaptation to social and physical worlds. The phenotypic express itself in the genes. Stress has an impact on the adult brain, down-regulating neurogenesis which can be reversible later on in life.

Crime investigators, forensic experts, prosecutors and the judiciary make decisions whilst being stressed, and this has either a positive or negative impact upon justice. The researcher is concerned, furthermore, that phenotype and genotype behaviour is present within our working environments. The SAPS have a code of conduct; if violated it amounts to misconduct, and this misconduct needs to be established with regard to whether the offender has a once-off tendency to misconduct, a borderline conduct disorder or full-blown conduct disorder. If the latter is the case, then psychotherapeutic intervention is necessary to reverse the effect. The conduct of the violator need be assessed as being acute or chronic so that personnel can be assisted to modify behaviour, and this could prevent unnecessary civil claims against the State.

Raphaely (2018) mentioned that Nolubabalo Nomsuka was wrongfully convicted owing to a report of a pathologist that found no signs of strangulation on Nomsukas' new-born infant. Luckily for Nomsuka, after six years of imprisonment, her life sentence was overturned. The wrongful convictions of Presiding Officers in court are not published as statistics for each financial year, therefore the public is unaware of such decisions. Acknowledgement of wrongdoing is the first step to recovery. Raphaely (2018) further mentions that Professor Sam Gross, co-founder of the US National Registry of Exonerations, notes that "250 exonerations in New York since 1989 found that a third of these involved prosecutorial misconduct, such as tampering with key evidence....or giving false testimony." An example of DNA Profile obtained from one of the routine tests (the Identifier® system) is presented below:

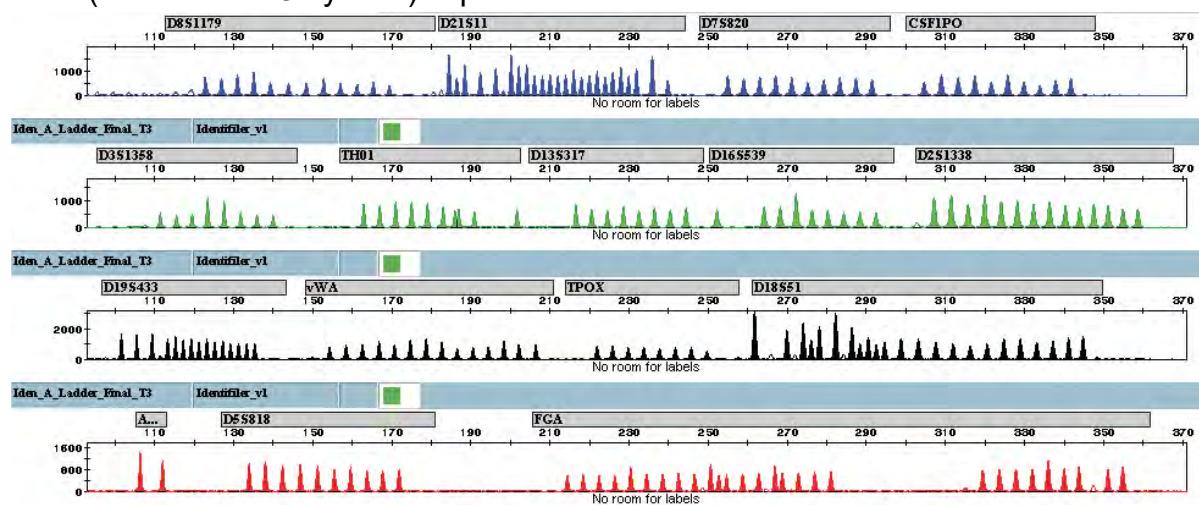


Figure 1: GeneMapper The 16 loci amplified using the AmpFISTR® (n.d.)Identifier® Multiplex System Reproduced from AmpFISTR® Identifier® PCR Amplification Kit Product Bulletin, Applied Biosystems, Foster City, Ca

1.3 Demarcation of the study

This research study was limited to professionals in the Kwa-Zulu Natal Province, Amajuba District, Newcastle. The study specifically focused on how DNA evidence was handled to curb criminal behaviour that results in the crimes of ‘defeating the ends of justice’, ‘fraud’, ‘corruption’, and the contravention of the DNA Act. The rationale for including this entity is:

- Firstly, they formulate the first entrance of the CJS in a direct capacity and experience high levels of civil action caused by the behaviour of certain officials. The First responder of a scene of crime, detectives and Crime Scene Management, have a crucial role to fulfil in terms of serving justice.
- Secondly, conduct of delict seems to occur frequently and, therefore, this type of pattern which is cyclic need to be broken. Integrity Management Units and Employee Health and Wellness (EHW) will have a role to play, but a trans-disciplinary approach is more urgently required to curb this behaviour which results in huge financial loss to the state. The scope of this research also explores viewpoints to bring about positive change regarding conduct aspects.

1.4 Research purpose

According to Hornby (1998:943), the definition of the term ‘purpose’ is an intention, an aim or the function of something. The purpose of this study is to prevent, identify, investigate and bring to justice criminally-inclined behaviour in terms of protecting DNA evidence to secure proper convictions. Ethical conduct is non-negotiable for employees within the criminal justice system. This study primarily focused on crime associated with DNA evidence with the aim of developing a professional policing model not by name but by *praxis*. The researcher explored the leadership conduct traits exhibited by police in the ethical protecting of DNA evidence and the prevention of unethical patterns.

1.5 Research aim

The research study provided guidelines with regard to non-compliance or an inept attitude regarding the Constitution of the Republic of South Africa (108 of 1996),

Criminal Procedure Act (51 of 1977), and the Criminal Law (Forensic Procedures) Amendment Act 37 of 2014 (hereafter referred as DNA Act). The analysis of behaviour was taken into consideration by those engaging within the criminal justice system. If this is not addressed, the International Human Rights Standard for Law Enforcement (1996) may be compromised. Important issues that one should know about and implement were provided.

The study summarised the challenges faced thus far regarding a balanced legal analysis of DNA evidence and its problems, the reasons for these problems, and possible solutions. Criminal behaviour will be further prevented and confronted. Criminal investigators could identify gaps that could be addressed in terms of DNA evidence presentation. The researcher investigated the impact of non-compliance regarding the DNA Act.

The study is significant because the researcher was able to identify underlying problems and behaviours, inhibiting factors and challenges in terms of evidence presentation regarding DNA. Intelligent solutions and the curbing of criminal tendencies by those who ought to deliver justice to the community was generated as well. The study will be used to develop a multi-, inter-, and trans-disciplinary mechanism to Provincial Commissioners who would be advised to identify best practices regarding DNA evidence presentation that would be a benchmark in South Africa.

The objectives of this research examined the role of experts when leading DNA evidence in court, namely, DNA evidence not to be uncritically accepted; guidelines for subjective behaviour not to dominate justice; and International best practices be established regarding DNA evidence presentation.

The research comprised a legal analysis of the scientific evidence of DNA, which has bearing on the behavioural trends of those bringing justice to society. Psycho-social-development surely has a role to play when detectives present evidence. What is vital is

that SAPS will be further helped to enhance professionalism and be viewed by the community as agents highly capable of handling any type of evidence, especially DNA.

The research study has helped to identify factors contributing to the high rise of civil claims against the state. Negative impact reported in the media poses a risk to the integrity of SAPS which serves our country with pride. Cozolino (2010:21) mentions that healthy functioning requires proper development and the functioning of neural networks organising conscious awareness, behaviour, emotion and sensation. Additionally, dysfunctional unethical behaviour was identified, such as the abuse of evidence, which undermines the laws of the country. The researcher has created an awareness regarding unnecessary civil claims, costing the government millions of rand.

(Mabunda, 2017:39), states that even traditional leaders have little faith in the judicial system being riddled with flaws, favouring perpetrators above victims of crime. The researcher further highlights more contributions of this study:

- a. The prevention of irregularities and misdirection within the criminal justice system.
- b. The dangers of uncritical acceptance of DNA evidence. Should a balanced perspective be taken into consideration, our criminal justice system will be taking an ideal step forward in regulating the DNA process.
- c. A balanced synergy of expert evidence regarding medico-legal and the probative nature of such evidence should be so precise, inculpating the perpetrator.
- d. The innocent will be exonerated and the guilty identified.
- e. Personnel within the criminal justice system will not be left in the dark and will become more competent and well-seasoned regarding fair criminal justice processes.

1.6 Research Objectives

- Examine the role of experts when leading DNA evidence in court;
- DNA evidence not to be uncritically accepted;
- Guidelines for subjective behaviour not to dominate justice; and
- International best practices be established regarding DNA evidence presentation.

1.7 Research questions

In the light of the above objectives, the primary research question is:

- Should SAPS experts, prior to giving evidence in court, be subjected to polygraph testing or psych-assessment?

The secondary research questions to be explored are:

- How can SAPS play a more important role so as not to accept DNA evidence uncritically?
- What factors can be accepted for critical behaviour?
- How can trans-disciplinary relationships be developed by role-players according to international best practice?

1.8 Key theoretical concepts

Maxfield and Babbie (2005:120) stated readers should be ensured regarding understanding of what is meant by concept(s), therefore clarifying key concepts(s) explain the study in particular.

1.8.1 Mental Illness

Badenhorst (2020:68) describes mental illness as the interference of a person's judgement deviating from norms and values. Only authorised mental health practitioners can make such a diagnosis.

1.8.2 Courts

Badenhorst (2020:16-17) mention that the establishment of South African courts are by the Constitution and Acts of Parliament. There are various courts such as the Constitutional Court; Supreme Court of Appeal; High Court; Magistrate's Courts which include the Family Court; Maintenance Court; Juvenile and Children's Court. Specialist Courts are also in existence.

1.8.3 Forensic investigation

Scientific methods are applied to clarify circumstantial evidence in court, according to Jackson and Jackson (2004:xiii).

1.8.4 Crime Scene

According to Kelly (2021) a crime scene is an area where a crime has been committed which entails a primary crime scene, being the actual scene of crime and a secondary crime scene which can yield clues to resolve a crime.

1.8.5 Expert Witness

Badenhorst (2020:5-6) defines expert witness as professionals with knowledge of experience in a specific field providing the court with impartial opinion in a specific discipline. Mental experts make valuable contribution regarding human behaviour.

1.8.6 Criminal Justice System

Badenhorst (2020:47) describes the Criminal Justice System (CJS) as using criminal procedure, the law of evidence and Correctional Services to deter, prosecute punish those whose conduct is harmful.

1.8.7 DNA

Deoxyribonucleic acid (DNA) according to Buckles (2007:198) identifies the perpetrators' skin cells and body fluid located at the scene of crime.

1.8.8 Ethics

According to NWU (2018), ethics is the conduct of humans which includes their attitude and the consequences of their acts which prescribes norms to build a certain ethos in the community.

1.8.9 Forensic Psychology

According to Badenhorst (2020:2) describes ‘forensic psychology’: “as the application of psychological knowledge to assist the court and the legal profession with an in-depth understanding of individual behaviour and functioning”.

1.8.10 Psycho-Social

According to Faul & Hanekom (2010:13), psycho-social functioning relates to behavioural patterns of an individual in the different roles and systems that the individual forms part of in his environment. The individual reacts with congruence among the four dimensions of his inner world to situations in his environment.

1.9 Research Methodology

According to Mouton (2001:35) states that the design of how the researcher conducts the study deals with the end results of the study. On-field investigations were utilised in certain instances which is research by empirical design.

The researcher entered the field and focused on certain experiences of participants adopting a qualitative approach by obtaining detailed information.

Ormrod and Leedy (2005:133) opine that phenomena occurring in the real world is dealt with by a qualitative research approach. Since the objective of the research was to measure the perceptions of participants concerning the use of uncritical acceptance of DNA evidence, the qualitative method was deemed to have been most appropriate, associated with qualitative research. It was practically impossible to have exercised control over the variables. Adopting a qualitative approach provided an in-depth understanding of the research topic, namely a legal analysis of the study of the scientific evidence of DNA.

1.9.1 Research Design

Being a sensitive project, participants were also permitted to voice their opinions without being recognised. All participants completed the developed questionnaire. Other data collection methods have been considered but were not practical. The said procedure was conducted irrespective of age distribution, level of education, socio-economic status, gender or creed, associated with quantitative research. Data collected was utilised to test the hypothesis. Other relevant information on the questionnaire were:

- a. What role does the DNA Act serve in term of the law of evidence?
- b. Can experts lead the court astray when presenting DNA evidence?
- c. When collecting DNA evidence is the chain of evidence followed?
- d. When presenting DNA evidence is it done critically?
- e. How precise is the DNA evidence?
- f. Is DNA evidence relative, valid and corroborative?
- g. Why should DNA evidence not be abused?

1.9.2 Research Approach

The researcher used the qualitative approach as described by De Vos, Strydom, Fouché, and Delport (2005:74) which concerns the method of understanding and non statistical method. The ideas and personal experience of participants were listened to. The viewpoint of investigators were taken into consideration.

1.10 Population and Sampling Procedure

Cox (2013:1) states when research data is utilised to derive at a conclusion the target population which is a set of units are used. The researcher corroborates that the target population are those units whereby the findings transfer to such units. For purpose of this study the target population was eleven (11) SAPS Newcastle Detectives who are experts in the field of criminal investigation pertaining to DNA evidence. They have the most experience in the investigation of crime. It was obviously not practical to have conducted research on everyone, but data was obtained only from a sample population. The researcher selected eleven (11) SAPS Newcastle Detectives, since it was cost

effective, for the researcher also lives in Newcastle. The detectives met the criteria for inclusion and will consist of males and females. Permission was obtained from the SAPS. These academics are included owing to their expertise. Such informants were approached by using a simple random sample associated with qualitative research. Since these people are professionals, the researcher's challenge was the 'time factor' in the form of availability and Corona Virus Disease (COVID-19).

1.11 Sampling Techniques and Procedure

According to Gray (2009:30) vital understanding only appear upon data being analysed and this is based upon the comprehensive gathering of data. In application, the researcher's data gathering tools consisted of semi-structured interviews, in this research.

1.11.1 The Selection of South African Police Services Detectives

As mentioned, a target population for this research, consisted of eleven (11) SAPS Detectives who were selected irrespective of years of service and rank as data from every level is vital. Detectives had the opportunity to participate in crime scenes pertaining to DNA evidence. Eleven Detectives were used as a simple random sample, as they freely volunteered to participate. This sample consisted of those who were actively engaged in crime investigation and crime scene processing. They are experienced in such criminal cases and are thoroughly academically trained.

1.12 Data collection methods

For the researcher, docket analysis and literature study were the most efficient techniques used. Interview questions were designed by the researcher. In preparing for the interview, the research problem was analysed, necessary information was obtained from interviewees identified by the researcher. Participants were approached within their environments, where the gatekeepers allowed time for the conducting of this research. A clear objective of research was provided in a language of understanding, a right to refuse to participate was made mention of, and voluntary acceptance to participate was provided, as well as the possibility of a post-interview.

The questionnaire was distributed personally in conjunction with interviews and via electronic mail ensuring a high response rate. Telephone and online surveys were conducted. A reliable self-report measure produces consistent results every time it is executed, according to Shaughnessy (2011:161-175). Self-report measures will be more reliable when they have many items measuring a construct. Furthermore, measurements were more reliable when the factor being measured had greater variability among the individuals in the sample that was tested. Finally, there was greater reliability when instructions for the completion of the questionnaire was clear. A question is valid if what it measures is what it had originally been planned to measure.

Furthermore, a “Thank you” letter was written, and further information about the research project was also made available to subjects.

1.12.1 In-depth Interviews

Interviews were implemented as per sample target population. The researcher dealt with the objects of study objectively and sympathetically. Collection methods, such as interviews, non-participative observation and group discussions were used. Welman, Kruger & Mitchell (2005:168-169) provide hints regarding pre-interview, the interview and post-interview. Interviewers scheduled their time properly, social convention was adhered to, care was taken not to engender resistance, equipment worked properly.

Key persons, such as Provincial Commanders, Cluster Heads, Head of Detectives were approached as gatekeepers to obtain permission to conduct interviews with participants. Participants submitted verbal and written consent to make vital input in research processes. This process was undertaken in a private place with closed doors and out of public sight as well as electronic interviews due to COVID-19.

1.12.2 Non-Participative Observation

The researcher observed participants directly. Observation can be done with the naked eye. A range of behaviours were examined. Ideas and theories of social behaviour were

developed. Precision, painstaking attention to detail and patience was required from the researcher.

According to Williams (2008:561-562) non-participative observation is an unobtrusive qualitative research strategy, participants may not be interacted with directly but interested in the subjective experience of social action. Social insight is derived by observation. Ethics norms may be broken by covert observation. According to the Oxford Reference (2021), non-participative observation is a technique when the researcher does not take active participation whilst scrutinising a situation, however, subjects are watched without their knowledge. Observation should be done over a period of time and be cautious that participants behaviour be not altered through observational processes.

The researcher unobtrusively observed the subjective experiences of participants, without violating ethical norms. Social insight was thus be achieved and precaution was taken, not to prevent behavioural alteration.

1.12.3 Focus-Group Interview

A focus group discussion was conducted with representatives from SAPS Newcastle Detectives in Kwa-Zulu Natal (KZN); Amajuba Cluster. Trint (2019) describes ‘focus-group research’ as a qualitative research method used to gain insight from people, a group of people are brought together answering questions and reporting on responses. Open conversations are conducted to establish academic research goals. Attitudes and emotions from participants were achieved when transcripts was analysed. In-depth results are the consequence of focus-group interviews. The researcher’s leading guidance is imperative to achieve the desired results.

1.13 Literature Review

1.13.1 Primary Literature

A broad range of primary sources in this research consulted were the Constitution of the Republic of South Africa (108 of 1996), Statutes, Judicial precedent, Criminal Procedure

Act (51 of 1977), SAPS ACT (68 of 1995), DNA Act (37 of 2013), Detective interviews and foreign law. Secondary sources such as SAPS DNA study guides, policies outside policing and dissertations were included. National and international policies were carefully analysed addressing shortcomings.

There was a vast amount of literature available on DNA evidence. According to NYU Law News (2015), Erin Murphy investigates how the criminal justice system misuses genetic identification. Similarly, Klatzow and Otzen (2016) state: “The advent of forensic DNA analysis has come as a mixed blessing to the forensic science community. It has been able to shine a brilliant light into some dark corners of forensics, resulting in a discrediting of much ‘forensic science’, which has convicted many innocent people.”

1.13.2 Secondary Literature

The researcher focused on relevant books regarding the scientific analysis of DNA evidence, journals, circulars, research articles, training manuals, National Instructions and documents which covered the topic. This gave the researcher clear indication as to whether the aim of the study had been achieved or not. To be more valid, the researcher utilised the most recent resources. The literature addressed the research questions and all that was relevant to the topic and research aim, using current literature. The following framework of South African law sources were also be analysed.

1.13.3 The Constitution of the Republic of South Africa Act 108 of 1996

The Constitution of the Republic of South Africa (108 of 1996), Section 35 (5) provides: “Evidence obtained in a manner that violates any right in the Bill of Rights must be excluded if the admission of that evidence would render the trial unfair or otherwise be detrimental to the administration of justice.” Public support of the legal system are undermined in certain instances, including that of SAPS, due to chronic behavioural patterns. A significant part of the problem derived from forensic scientists who were incompetent, unquestioning and in some cases, downright fraudulent. Another major factor was the inability of the legal profession (with some exceptions) to penetrate the

veil of bogus ‘forensic science’. One needs only to read the contemporary literature to see that much cross-examination cuts no deeper than a superficial scratch.

1.13.4 Law of Evidence Amendment Act 45 of 1988

The law of evidence is noted for casuistic development. According to Naude, van der Merwe & Moodley (2011:2), the law of evidence teaches one how to go about proving one’s case in court. It is essential to know what evidence will be admissible and what will not. Inadmissible evidence will be excluded by the court. Evidence acquired in violation of the Bill of Rights in the Constitution may often have to be excluded as well.

1.13.5 Case Law

Furthermore, Van Niekerk (2001) maintains that processing should be original and the chain of custody of DNA evidence should be properly documented. The researcher agrees owing to the fact cross-contamination of evidence may transpire, thus contaminating the evidence which may render it void in court. In 2001, in *S v Maghina*, DNA evidence was brought before the court, and the court held that, where an accused’s guilt depends solely on the results of scientific analyses, it is of paramount importance that the testing process can be verified at any time by an objective expert and the trial court.

The incorrect use of DNA evidence can lead to the miscarriage of justice. Similarly, Martin outlines three criteria that should be met for forensic evidence to be accepted as reliable:

- a. The underlying scientific principle must be considered valid by the scientific community;
- b. The technique applying the scientific principle must be known to be reliable; and
- c. The technique must be shown to have been correctly and properly applied to the case in question (Martin C “DNA profiling” 1998 *De Rebus* August 68). In van der Walt (2000), the Australian case of *R v Chamberlain* (2) illustrates the consequences of the use of unreliable scientific methodologies in forensic DNA analysis.

Badenhorst (2020:5-6) defines expert witness as professionals with knowledge of experience in a specific field providing the court with impartial opinion in a specific discipline. Mental experts make valuable contribution regarding human behaviour.

The researcher proposes that violating the rights of the innocent should not be treated lightly, and we should rather learn from these failures. He further cautions that, according to Roux (2017:62), one of the psychopathic types is the manipulative deceitful type: "This type includes the deceivers, con artists, liars, fraudsters and social chameleons who do not hesitate to lie and deceive in order to satisfy their own egoistical, selfish and impulsive needs...their main method is the manipulation of people and circumstances, and they are mostly from highly normal to above average and even superior intelligence. They do not hesitate to pursue their self-satisfying goals in a callous, emotionless, and affectless manner."

According to Oakley (2008:421), a description of a Machiavellian is, "A person who is charming on the surface, a genius at sucking-up power, but capable of mind-boggling acts of deceit for control or personal gain...a person whose narcissism with subtle cognitive and emotional disorders in such a fashion as to make him believe that achieving his own desires, and his alone, is genuinely beneficial."

1.14 Data analysis and interpretation

According to Lebied (2018) success is based upon an ability to analyse complex data producing actionable insights. Data interpretation is about arriving to an informed conclusion by a process of information through which data is reviewed. This needs to be properly done and not haphazardly. There are two categories "quantitative analysis" and "qualitative analysis". Qualitative data analysis is categorical and described in a descriptive context rather than numerical values or patterns.

Narrative data employs person-to-person techniques done by observation' documents and interviews. Qualitative data analysis is about noticing, collecting and thinking about things.

1.15 Trustworthiness of the study

According to Mouton (2001:100), the researcher should use numerous sources of information to ensure validity. The researcher ensured that interviews conducted were amongst those who were the most experienced people from whom to obtain information for the intended research. Other experience or training may influence the participant's information if a post-interview would be conducted. Privacy and confidentiality with participants to express themselves freely was ensured by the researcher.

The researcher did not put 'words into the mouth' of participants. Literature used throughout this research proposal is acknowledged.

1.16 Ethical considerations

According to Kaewkungwai (2019) researchers engaging in human studies should implement ethical conduct. Informed consent is imperative. Three core-ethical area are vital:

- a. Risk
- b. Privacy
- c. Vulnerability

Ketefian (2014) mention that the U.S Congress that there should be rules to guide researchers working with human subjects. Ethical principles should be:

- a. Respect
- b. Beneficence
- c. Justice
- d. Informed consent

1.16.1 Permission to conduct the study

The researcher obtained permission from the SAPS Head Office in Pretoria and from SAPS Provincial Head Office in Durban to conduct this study with SAPS Newcastle Detective members and UNISA.

1.16.2 Informed Consent

A choice was given to participants either to participate or not according to informed consent mentioned by, Ketefian (2014). The researcher was not in a position to provide financial rewards for participation.

1.16.3 Anonymity and Confidentiality

Kaewkungwai (2019) mentioned privacy and confidentiality with participants to express themselves freely was ensured by the researcher. All information given was highly confidential. The findings of the research will be made public. The participants' names were not put on the interview schedule, but, instead, numbers were given.

1.17 SUMMARY

This chapter made provision for the research problem to be centric to this study. Aspects regarding purpose of study, research aim, research objects and the discussion of questions were dealt with. The explanation and clarity of key concepts regarding their meaning were identified. The methodology, study design and values of this research was further discussed. There was intense concentration on target population and sampling, data collection, data analysis, validity and reliability as well as ethical consideration and literature.

Chapter 2 provides an understanding of the admissibility of DNA legislation and psychological behaviour when used as evidence.

1.18 RESEARCH LAYOUT

Research layout consists of the following four chapters:

CHAPTER 1: General orientation.

CHAPTER 2: Admissibility of DNA legislation and psychological behaviour when used as evidence.

CHAPTER 3: Presentation and interpretation of findings.

CHAPTER 4: Conclusion and recommendations.

CHAPTER TWO: ADMISSIBILITY OF DNA LEGISLATION AND PSYCHOLOGICAL BEHAVIOUR WHEN USED AS EVIDENCE

2.1 Introduction

On 27 January 2014, the government passed the DNA Act, Criminal Law (Forensic Procedures) Amendment Act 37 of 2013, Wits Justice Project (2015:1). The challenge is that DNA could proceed from extraneous sources, but DNA evidence cannot be disputed if all legal requirements have been fulfilled. Our DNA profile is uniquely designed and significantly efficacious in criminal investigation and the prosecution of offenders. The methodology and interpretation of DNA analysis and profiles ought not to be perceived as being infallible, Murphy (2008:490). DNA evidence should be critically challenged especially when tendered as forensic evidence. The integrity of biological evidence ought to be systematic within its legal framework paradigm, Kline (2016).

According to SAPS Legal Database (2019), the Forensic Science Laboratory (FSL) of the South African Police Service was formed on 15 January 1971, with Biology, Chemistry and Electronic Units. In March 1987, the Ballistic and Question Document Unit amalgamated with the FSL. The main laboratory is in Pretoria, and decentralized offices are established in Cape Town, Port Elizabeth and Durban. The objectives of FSL are to bring offenders to justice and, interesting to note, to protect innocent people against prosecution. DNA evidence may not be the silver bullet, but there are many cases resolved through crime scene matches.

It is not only legislation that is vital regarding DNA biological forensic evidence, but the psychological cognitive manner regarding its collection, preservation and hermeneutical presentation in court is equally treated. Justice, fairness and scientific validity is paramount. The researcher argues that more needs to be done to detect the deception of personnel within the CJS, as they may appear normal, only to find out at a later stage that the criminal element surfaces. A crime is injurious to a state or community whilst a delict is injurious to private or individual interests.

Even if a complainant pleads with the police not to proceed with a criminal charge, they may still continue to open a criminal case (Snyman 2014:4). The researcher further argued that anti-social behaviour and social impairment have been noted in various cases, with Criminal Justice personnel as offenders.

Cognitive Forensics, an academic discipline focus on how forensic practitioners can overcome cognitive and human factors that potentially lead to bias in the laboratory owing to cognitive and human factors (Dror & Stoel 2014). The researcher emphasised that, as much as physical contamination be protected, it is imperative for cognitive or subjective aspects to be seriously taken into consideration by police and crime scene technicians.

The National Institute of Justice (NIJ) analysed 133 cases from (1974 – 2016) and listed six (6) categories of “contributing factors” regarding the discrepancy of cases (NIJ 2010:4-5):

- Eyewitness misidentification;
- False accusation;
- Official misconduct;
- Inadequate legal defence; and
- False forensic evidence.

Owing to the fact that innocent people were found guilty, it has become a revelation that erroneous convictions do exist according to Narsee (2013). The researcher illustrates in the diagram below how yearly assessments can be undertaken by police. The gap identified by the researcher is that police are not subjected to a compulsory yearly mental health assessment focusing on ethical behaviour and the prevention of misconduct.

This will improve the decision-making abilities of police in terms of ethics. The researcher has, therefore, developed a model called PPAT that will assist SAPS personnel to develop a healthy ethical mind and brain. The model is represented below as Figure 2:

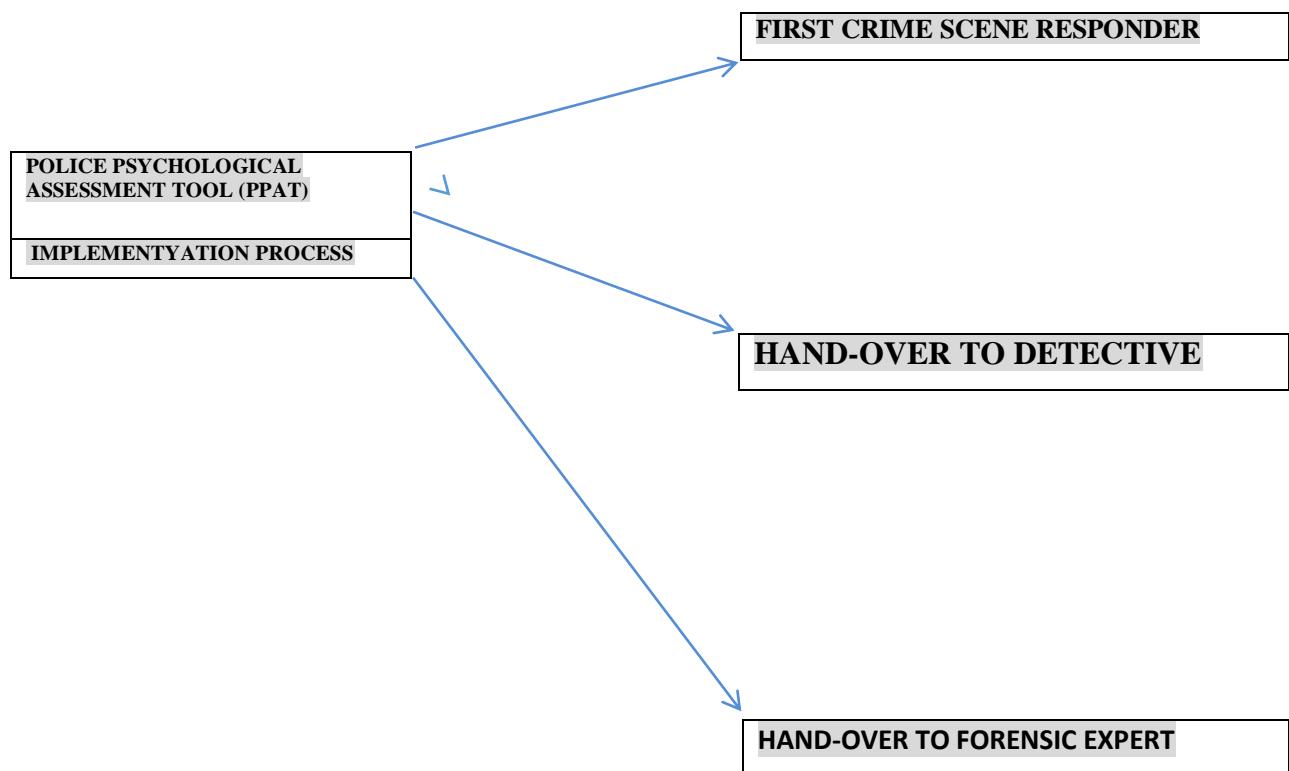


Figure 2: Police Psychological Assessment Tool (Harry 2021)

The researcher states that police and forensic experts are determined to prove their case, and they, therefore, face the pressure of ensuring a successful conviction. This may be a motive to tamper with crime scene evidence or laboratory evidence slightly in order to justify their dubious findings securing conviction rates according to Narsee (2013). Narsee (2013) quotes researcher David Bruce: “An emphasis on performance measures is put on criminal justice officials...this encourages them to prioritise getting convictions over ensuring that the innocent are acquitted”. This type of misconduct originates in the mind and, therefore, the brain patterns this behaviour which is evident in various malicious prosecution criminal cases.

The case law of Sandy Williams, *Petitioner v Illinois* in the Supreme Court of United States verdict on 18 June 2012, justice Alito announced the judgement of the Court and delivered an opinion in which the Chief Justice Kennedy and Justice Breyer join: "...In petitioner's bench trial for rape, the prosecution called an expert who testified that a DNA profile produced by an outside laboratory, Cellmark, matched a profile produced by the state police lab using a sample of petitioner's blood...the expert testified that Cellmark was an accredited laboratory and that Cellmark provided the police with a DNA profile...The expert made no other statement that was offered for the purpose of identifying the sample of the biological material used in deriving the profile for the purpose of establishing how Cellmark handled or tested the sample. Nor did the expert vouch for the accuracy of the profile that Cellmark produced....Petitioner's main arguments is that the expert went astray when she referred to the DNA profile provided by Cellmark as having been produced from semen found on the victims' vaginal swabs.....For more than 200 years, the law of evidence has permitted the sort of testimony that was given by the expert in this case...an expert may express an opinion that is based on facts that the expert assumes, but does not know to be true....The use of DNA evidence to exonerate persons who have been wrongfully accused or convicted is well known...."

The researcher further inferred from this case law that the Chief Justice has acknowledged that people have been wrongfully convicted by personnel within the CJS. An illustration of the human cell and DNA will be depicted below in (Figure 3) in order to have a clear picture and insight regarding DNA and how it is used as biological evidence.

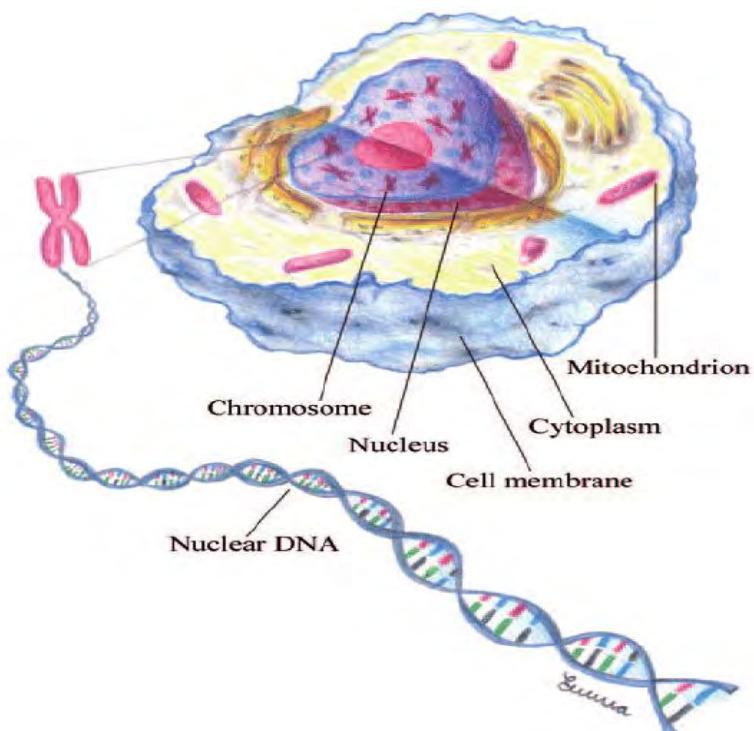


Figure 3: Michondrial DNA (Lindsten n.d.)

Figure 3 above clearly provides a visual idea of the human cell. The ‘X’ on the left of the cell is known as ‘chromosome’. The double-helix originates from chromosome which is the DNA of human beings. There are 46 chromosomes, 23 from each parent.

The researcher provides the procedure to administer PPAT, beginning from 'start' and proceeding clockwise:



a. Legal Vision

The goal of SAPS should envisage a legal environment of sound ethics.

b. Screen

Criminal investigators to freely provide information of any abnormal behavior in the past

c. Strategy

SAPS should lay-out a plan to intrinsically achieve this goal.

d. Evaluation

Criminal investigators can be assessed to determine whether vision was achieved.

2.2 Key objectives of the DNA Act

Every contact leaves a trace value, Edmond Locard (1877 – 1966) (Muller & Saayman 2003). This means that when DNA testing is analysed for an individual:

- Matched biological evidence can connect suspect to a scene of crime; and
- Suspect may be exculpated.

The primary source consulted is the Criminal Law (Forensic Procedures) Amendment Act (37 of 2013) (Government Gazette 2014) with key objectives of:

- Amending the Criminal Procedure Act of 1977 in order to take specified bodily samples from certain categories of persons for purpose of DNA forensic analysis;
- To protect the rights of women and children when taking DNA samples;
- To regulate proof of facts by affidavit or certificate;
- To add Schedule 8 of offences to Criminal procedure Act, 1977;
- To establish and regulate the National Forensic DNA Database of South Africa;
- To provide conditions of Forensic DNA samples being retained or destroyed;
- To use DNA profiles to investigate crime and prove the innocence or guilt of persons before or during prosecution or exoneration of convicted persons;
- Assist to identify missing persons or unidentified human remains;
- Protection of rights of children in removal or retention of DNA profiles;
- Provide oversight over National Forensic DNA Database;
- Retention and use of DNA samples and forensic DNA profiles;
- Repeal certain provisions of Firearm Control Act, 2000 and Explosives Act 2003 overlapping in powers in the Criminal Procedure Act, 1977;
- Regulating powers in respect of taking fingerprints; and
- To provide for transitional provisions in respect of the DNA database.

The researcher points out that no mention is made regarding the psychological cognitive state of those handling DNA evidence and improving on their cognitive ethical state. Although the above objectives have been achieved in various pieces of case law, planning has not been provided in terms of subjective psychological improvement on a crime scene and the handling of evidence ethically.

2.3 Forensic DNA laboratories

EasyDNA (2021) mention that certain chemicals are utilised to break down the cell without damaging the DNA. There are universal methods of DNA typing. FSL adherence is strict according to these standards (Van der Walt 2008). The researcher proposes that, in a rape case, DNA may be present owing to a consensual partner of the victim prior to the crime, and, therefore, caution needs to be applied. Collected DNA evidence is then sent to the laboratory for profiling. DNA Profiling Involves Five Steps according to Public Intelligence (2009):

2.3.1 DNA Profiling involves 5 steps

i. Identification of bodily fluid

Blood and semen can be identified by using biochemical, microscopic or immunological techniques.

ii. DNA Extraction

Cells rupture when treated with chemicals from a vaginal swab or semen from underwear; it is extracted, and DNA processing is purified.

iii. Polymerase Chain Reaction (PCR)

DNA is increased using PCR. Eight to fifteen areas of DNA are targeted as short tandem repeats (STR).

iv. Separation and Visualization of DNA Profile

Short Tandem Repeats are visualized by the excitation of attached fluorescent dye and separated by capillary or gel electrophoresis. This allows designation as exhibit for DNA profile.

v. Comparison and Interpretation

A comparison is undertaken with known samples and entered into national and international databases, such as INTERPOL'S 1 – 24/7 DNA Gateway. Mixed or partial profiles are a challenge.

According to Snyman (2014:38-39), in the Constitution of the Republic of South Africa (108 of 1996) section 35 (3) (/) chapter 2: “The Bill of Rights applies to all law, and binds legislature, the executive, the judiciary and all organs of the state. This means that every provision in a statute or common law which is in conflict with the Bill of Rights may be declared null and void by a court.” The researcher proposes that crime scene contamination or forensic analysis contamination, no matter how methodological the DNA profiling process is, would be in violation of the Constitution of the Republic of South Africa Act 108 of 1996. The researcher has coined the term ‘DNA Crime Scene Fraud’, which simply means distorting biological evidence so prejudicing another.

2.3.2 Basic elements of a DNA report

EasyDNA (2021) laboratory is accredited by international bodies. DNA tests can be done personally or as needed in court. It meets the ISO 17025 standard. The laboratory follows the required standards as there are regular audits. This recognition is awarded when conforming to ISO's standards. Results are precise and fast. Samples are double checked. The report is scientific and numbers and terms may not be easily understood. The DNA report includes laboratory identity, case number, date, race, statement of results and signature of Laboratory Director.

2.3.3 The Crime Scene

Samples need to be collected at the scene of crime. A crime scene investigation consists of recording the scene, identifying physical evidence, collecting biological and other potential evidence, van Niekerk (2001). Biological evidence collected at a crime scene should be collected, documented and preserved. According to SAPS Policy on crime scene management, a crime scene is where evidential value can be collected or the surrounding area of an alleged offence, SAPS (2009:2).

2.4 Psychological challenges

Every stress leaves an indelible scar, and the organism pays for its survival after a stressful situation by becoming a little older. Norberg (2010:1) states: "Throughout history older generations have perceived problems in the behaviour and actions of children and adolescents. However, while some rebellious and deviant behaviour is a part of normal human development, there are some children and adolescents whose behaviour falls outside what is considered as normal. In these cases behaviour can reach extremes that causes significant problems for themselves, their peers, family and teachers. These individuals are marked by chronic oppositional behaviour towards authority figures, and, in the more serious cases, violation of the basic rights of others. Their behaviour can have long-term consequences, impacting upon their ability to live successful and happy life as adults. They are at a high risk for developing a wide range of social and emotional problems, and having marital, occupational and legal problems as adults." The researcher agrees that behaviour outside than normal is marked by chronic oppositional behaviour toward authority figures and the violation of the basic rights of others.

Adult delinquency, result in unhappy and unsuccessful lives. They have chronic marriage, legal and occupational problems as adults. This type of chronic behaviour requires specialist intervention with the purpose of detection. Appointing new police students requires more than a psychometric test and vetting. Childhood behaviour needs to be taken into consideration, especially enquiries done at High Schools where

the personal files of students are kept. The local Principal and School Governing Body (SGB) ought to recommend or decline the application of a new applicant in the SAPS.

The researcher emphasised that this neglect is a start to later downfalls and character flaws of SAPS employees. The student's file is more of a reliable source than opinion of community leaders and parents, who do not have files, although their input should be secondary. Conduct Disorders (CD) were medically diagnosed until 1968 and this was one of the major reasons why youth were referred to a mental institute, Thomas (2010).

A person needs to show three or four behaviours for a diagnostic criterion for CD:

- Aggression to people and animals;
- Destruction of property;
- Deceitfulness and theft; and
- Seriousness violation of rules (American Psychiatric Association, 2013).

The researcher emphasises that a 'crime-within-a-crime' is to be excluded at all costs from the conduct of the police. Behaviours that violate the rights of others are defined as Conduct Disorder (CD) (American Psychiatric Association 2013). The researcher is concerned that adults are displaying these conduct disorder traits identified by case law discussed. There is strong reason to believe that these traits were latent in them when they applied for employment in SAPS and but they were not detectable.

Astobrieta (2020), mention that the conviction of a perpetrator of crime is the ultimate goal for crime scene investigation and those involved in collecting evidence ought to preserve it, therefore, the researcher is concerned that deliberate, intentional or negligent contamination of a crime scene gives rise to more crime, defeating the purpose of investigation. The researcher argues that an excuse for the deliberation of 'human error' is also futile because it either falls within the ambit of intention or negligence. The CJS, should also be viewed from a psychological perspective to identify deceptive behaviour, misconduct and anti-social personalities that surface within criminal justice personnel.

Many case laws reveal how deception surfaces, wasting millions of rand. The researcher, therefore, it is preferable treating the root of deception rather than dealing with the symptoms. Disciplinary matters and expeditious enquiries are addressed only to find that patterns of deception still surface. The researcher correlates that these patterns are networked in the mind of the deceiver, and unless the pattern is disrupted, the problem will always be a reality. The researcher emphasises that stress debriefings are helpful, but intervention is needed to curb unprofessional behaviour.

According to Snyman (2014:30), "The requirement of an act or conduct incorporates the principle that mere thoughts or even decisions are not punishable. Before there can be any question of criminal liability, X must have started converting his thoughts into actionConduct is voluntary if X is capable of subjecting his body or muscular movements to his will or intellect..." *Mens rea* in Latin means guilty mind (Snyman 2014:145-146) or guilty intentions, and *actus reus* responsibility for the criminal act needs to be accounted for. At this junction, the researcher proposes the *nexus* between mind that is pathological and a non-pathological healthy, positive, robust mind. If the 'mind' is so imperative in committing misconduct, then the researcher will further probe into the management of mental health problems. Psychopathic behaviours do not fall into the *mens rea* definition, due to being mentally incapacitated.

The researcher argued that contaminating crime scenes and deliberately misleading the court in the name of expert evidence cannot be overlooked. The individual had an intention, was negligent or had a mental problem. The researcher again argues that 'human error' cannot be a ground of justification for police misconduct, so allowing the policeman to evade responsibility and losing his integrity. It is, therefore, intention, negligence or mentally challenged propensities that make people do what they do. The deceptive adult reverts into the deceptive child, partially because the problem was not dealt with professionally. After admission, 70% of people between the ages of 15 – 33 years show the risk of criminal conviction.

2.5 Management of mental health problems

The researcher argued that the core element of ethical and professional change begins in the mind, as depicted in Figure 4. To sculpt new attitudes, values and knowing the ‘self’ can be done by a professional counsellor, not necessarily a psychiatrist. Snyman (2014:148) states: “Legal and moral norms often coincide...”

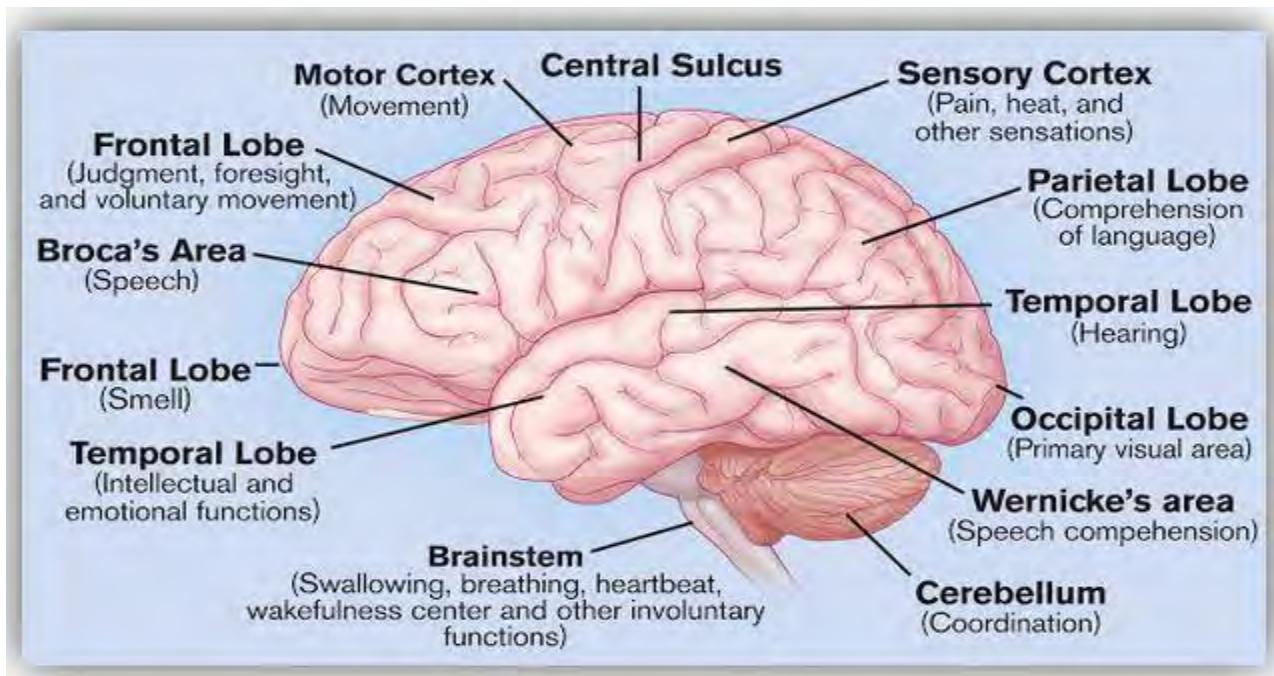


Figure 4: Brain Sense (Guindy 2015)

The brain is dynamic and not static; it continually changes in response to environmental challenges. The neural architecture of the brain is shaped by the environment. The brain has the ability to change during therapy. Through successful management, the client can internalise skills. Early chronic stress increases chances of damage to the brain. With nurture and support stress hormone levels decrease, and soothing talk helps the brain to integrate experience (Cozolino 2010:19-22).

Cozolino (2010:24) states: “Difficulties in early caretaking, genetic and biological vulnerabilities, or trauma at any time during life can result in the lack of integration among networks. Unresolved trauma can cause ongoing information processing deficits and disrupt integrated neural processing ...Children victimised by psychological,

physical and sexual abuse have a greater probability of demonstrating electrophysiological abnormalities in executive regions of the brain vital to neural network integration."

The researcher agrees that, when mental health problems are not properly managed, and are simply taken for granted, this leads to further crises affecting environmental systems. Early chronic stress has an impact on the brain at a later stage. Unresolved trauma leads to deficits in neural processing. Mental Health Building Programmes ought to be part of SAPS yearly routine for every employee. This will improve the integrity and image of SAPS, having a snowball effect because, employees with a healthy mind produce a healthy organisation, and ultimately a healthy legal society.

2.6 Summary

The chapter has dealt with the DNA Act objectives and utilised important sources of South African law as: the Constitution of the Republic of South Africa (108 of 1996), legislation, judicial precedents and common law as well as international case law regarding the judges' remarks on crime scene contamination. All rules of law must be aligned with the Constitution of the Republic of South Africa (108 of 1996), which is always superior, parliament cannot even make laws *contra* to it. A picture of a human cell and double helix was further presented to provide clarity about the subject of DNA. The purpose of laboratories and the process of DNA extraction further clarified the subject. Indeed DNA Analysis in Criminal Investigations is a must and cannot be downplayed owing to its scientific validity. That portion of the chapter seemed to be the 'hardware' of the topic, whereas the second portion of the chapter seemed to be the 'software' of the topic, since psychological health was further brought into the equation, especially regarding *mens rea*.

This revealed the notion that adult misconduct, could be partially in direct proportion to childhood undetected misconduct. When such applicants enter the job market, they are not fine-combed screened and later criminal elements surface. This cost the State

billions of rand because of misconduct. The Code of Conduct of SAPS ought to be borne in mind and practised.

CHAPTER THREE: PRESENTATION AND INTERPRETATION OF FINDINGS

3.1 Introduction

This chapter focused on the presentation of research findings as outlined by the aim and objectives of this study. The aim of this study is to legally analyse the scientific evidence of DNA, within the management of criminal investigation. Professionalism by the police ought to be exhibited in an exemplary fashion, and this involves the exploration of leadership behavioural traits and the prevention of unethical behavioural patterns in the protection of DNA evidence. The objectives in Chapter 1, were to examine the role of experts when leading DNA evidence in court for DNA evidence to be critically evaluated, avoiding subjective behaviour so as not to dominate justice unfairly and to examine best practice of DNA presentation.

Data were gathered from **individual interviews** with detectives. The exploration of these findings was detailed. To unpack the research problem, the following questions were asked:

- Should SAPS experts be subject to legal opinion and criminal investigators be subject to polygraph testing?
- Can SAPS play an important role to accept DNA evidence uncritically?
- What factors can be accepted for critical behaviour?
- How can trans-disciplinary relationships be developed by role-players according to international best practice?

3.2 Presentation of the findings

The researcher utilised semi-structured interview schedules to guide interviewees (Greeff 2011:353). The researcher could, therefore, gain data comprehensively in view of the behavioural aspects of DNA evidence management which could be thoroughly evaluated. Based upon the research questions, the following findings are unpacked.

3.2.1 Legal opinion with regard to subjecting SAPS experts to polygraph testing

Badenhorst (2020:5) state that opinions differ however an expert witness has to be impartial about matters in dispute before the court, in terms of his or her field of specialisation.

In the case of *Shinga v Gilbeys Distillers and Vintners (Pty) Ltd*, the Industrial Court considered evidence of a polygraph examiner, but later established the evidence as having been unreliable. The court held that the polygraph test is unreliable in the absence of evidence *aliunde*. The court excluded tests to be scientific owing to the operator's methodological performance. Few participants agreed about polygraph test.

The participant's responses were as follows, quoted verbatim:

"Yes, to make sure he is honest..." (One-on-one participant 6). "I don't think so it's got no admissibility in our courts in any case," (One-on-one participant 2). "Yes," (One-on-one participant 4).

3.2.2 The importance of SAPS to uncritically accept DNA evidence

Badenhorst (2020:100-101) mentions that the satisfaction of the court depends upon:

- Qualifying with an accredited degree or diploma.
- The witness as an expert need specific knowledge in their field.
- Specific training, skills and experience are needed.
- Accredited literature from trustworthy sources to be used.

It can be established that there is a huge possibility that evidence is hypothetically taken for granted, so, therefore, having no bearing on the case. The research proves that the legal opinion of criminal investigators is just as vital as technical skills. The legal opinion gets the investigator to start thinking without 'tunnel vision', but rather to develop critical reasoning skills in terms of the law.

The investigator's evidence presented in court is critical, and is either inculpatory or exculpatory evidence that determines the innocence or guilt of an accused. The SAPS have to think about being more of an evidence-based organisation rather than relying on uncritical approach to DNA evidence presentation in court. It should be borne in mind that the management and presentation of DNA evidence in court is vital, as the investigator ought to be methodologically ethical, as technical issues are equally important as credible issues. The investigator ought to consider this vital aspect.

The research study thus deduces according to Raymond, Walsh, S.J., van Oorschot, Gunn, Evans and Roux, that: "DNA has played a role in forensic investigations...however the interpretive framework on which the evidence is based has been somewhat neglected...as physical evidence will enable investigators and scientist to assess its value as evidence", thus DNA evidence be critically assessed when identifying such evidence to inculpate the perpetrator. This investigative technique is important and may be implemented as follows:

- Scientifically inculpate a perpetrator, without a cast of doubt;
- To successfully prove in court that a crime was committed;
- To avoid wrongful conviction owing to the secondary transfer of DNA evidence;
- To identify and individualise accurately;
- Suspect could be linked to crime scene;
- To avoid unnecessary civil claims against the Minister of Police; and
- To reduce any other risk factor such as tarnishing the image of SAPS.

The participant's responses were as follows, quoted verbatim:

"Yes. Criminal probing is one of the crime behaviours evaluated to predict the likely attributes of an offender," (One-on-one participant 4). *"Yes, because not every investigating officer who attends to a scene would be the custodian of the docket,"* (One-on-one participant 2). *"Yes"* (One-on-one participant 11).

3.3 Secondary findings

According to Formplus (2020) Secondary Research is systematic investigation that researcher solely relies on, this data is analysed for valid research conclusions.

Through consulting the literature review and conducting interviews, secondary research deductions by the researcher were as follows:

- Admissibility of evidence;
- Behavioural characteristics of a forensic investigator;
- Management of DNA evidence;
- Integrity;
- Identifying DNA evidence;
- Understanding DNA concept;
- Psycho-social functioning of an investigator;
- Locard Principle; and
- DNA preservation.

3.3.1 Admissibility of evidence

Based upon the interviews and literature review compiled, the following was established.

According to Snyman (2014:38), Section 35 Chapter 2 of the Constitution of the Republic of South Africa (108 of 1996) contains the Bill of Rights. All law and all organs of the State, including the legislature, executive and judiciary, are bound by the Bill of Rights contained in Section 35, Chapter 2. Every legal provision will thus be null and void when in conflict with the Bill of Rights. Section 35 (5) of the Constitution of the Republic of South Africa, 1996, clearly stipulates that evidence acquired in a manner that violates a constitutional right must be excluded in a trial.

In *Mthembu v S* [2008] 3 All SA 159 (SCA), the Supreme Court of Appeal found the conduct of the police to be unprofessional. Corroboration of evidence and legal analysis can be beyond reproach but impotent when there are traces of

unconstitutionality when such evidence is obtained. When police themselves commit egregious crime, it is indeed highly regrettable.

Section 210 of the Criminal Procedure Act (51 of 1977) guides by showing that, no evidence shall be admissible if it is irrelevant and cannot assist in proving or disproving any point in criminal proceedings. In *S v Gokool* it was pointed out that the foundational base of the law of evidence is relevance, and, therefore, admission can be allowed. The researcher established that knowledge was lacking regarding a definition of the concept of admissibility of evidence.

The participant's responses were as follows, quoted verbatim:

No answer was provided, (*One-on-one participant 11*). “*Prove case by evidence in court,*” (*One-on-one participant 10*). “*The evidence must be relevant, the matter being tried at court,*” (*One-on-one participant 3*). “*It is any testimonial, documentary or tangible evidence that may be introduced in a court of law to strengthen a case being tried,*” (*One-on-one participant 4*).

3.3.2 The behavioural characteristics of an effective forensic investigator

Osterburg and Ward (2010:436) mention that a criminal investigator should not be negligent at a crime scene. Schwikkard (1997:141-142) maintains that no matter how evidence was gained it should be admitted. There was no legislation to guide South Africa regarding the unlawful admission of evidence. Such exclusion would be due to the judge's discretion but according to Packer (1968:149-172), unconstitutional evidence should be excluded even if it is relevant. Police and prosecuting authority's behaviour ought to abide by the Constitution. This clearly established that a strong sense of morality was present in the consciousness of the participants.

The participant's responses were as follows, quoted verbatim:

"Hygenic behaviour and disciplined in order to follow protocol," (One-on-one participant 3). *"Must be highly analytical, maintain accuracy in their investigations. Good communication skills,"* (One-on-one participant 2). *"Professionalism, wisdom and tactical,"* (One-on-one participant 1). *"To be objective,"* (One-on-one participant 10).

3.3.3 Management of DNA evidence

Gilbert (2010:281) argued that DNA must be managed in a cautious manner. Management entails planning, organising, leading and control mentioned by Hellriegel, Jackson, Slocum, Staude, Amos, Klopper, Louw and Oosthuizen (2008:04). De Wet, Oosthuizen and Visser (2011:171) mention that it is vital to maintain DNA evidence when collected at a scene of crime. Applicable to this study's managerial purpose pertains to the control of DNA evidence in a critical ethical manner. According to Horswell (2004:19), gloves must be worn and collection equipment remain clean. The South African Police Service, Management of Exhibits Manual provides procedures for collecting DNA evidence (South African Police Service, 2005b:7-8, 11-12):

- Latex gloves must be worn every time;
- Evidence to be treated carefully and not damaged;
- Use cones to mark evidence;
- Evidence to be photographed in original position;
- Fragile evidence to be collected first and then hard evidence; and
- Each exhibit properly packaged.

Section 212(8) of the Criminal Procedure Act (51 of 1977) has protocols relating to the receipt, packing and despatch of evidence. Affidavits may be accepted by the court as *prima facie* proof as alleged in section 212(8)(a)(ii). In *S v Van der Westhuizen* it was pointed out that blood sample evidence management was defective because of the time of receipt and analysis. In *S v Boyce* case, the certificate complied with provisions of section 212(8) and the same seal number by the doctor and analyst corresponded. In Du Toit (1994:24-94), Section 225(1) of the Criminal Procedure Act (51 of 1977)

concludes that corresponding DNA evidence of an accused will be admissible. The researcher established that participants had a very clear understanding of the management of a crime scene.

The participant's responses were as follows, quoted verbatim:

"Yes. Biological evidence must be carefully managed since the evidence of any finding in forensic genetics is determined," (One-on-one participant 6). *"Yes, because if you don't know how to collect it and preserve it, if done incorrectly, you might contaminate it and lose a case. Let a convict go,"* (One-on-one participant 2). *"Yes there are procedures in place and standing operating procedures as to how DNA evidence should be collected...,"* (One-on-one participant 3).

3.3.4 Integrity

According to Chadwick (2019) integrity is: "aligning your conduct with what you know to be excellent", ethical standards and principled values are reflected.

The public sector, according to the Organisation for Economic Co-operation and Development (OECD) (2010:14), is "held responsible for carrying out a defined set of duties or tasks, and for conforming with rules and standards applicable to their posts".

Trauffer, Bekker, Bocarnea and Winston (2010:23), convey that leadership wisdom is a virtue that saves a sinking ship by redirecting it. People that have integrity can integrate it successfully into daily transactions, according to Azuka (2009:13). In *S v Mphala*, two confessions that met the requirements of admissibility were excluded using the base of section 35(5) of the Constitution. The attorney in this matter instructed that no arrangements be made for the accused regarding pointing out until consultation, but the investigating officer nevertheless progressed with the accused confession without adhering to the attorney's instructions. The court excluded both confessions.

The court viewed that the accused's right to remain silent, his right to legal representation and the right to not being compelled to make a confession or admission had been violated. The interests of justice and rendering the trial unfair, would be the case if admission had been allowed. Evidence, therefore, was excluded. Case law revealed that integrity is an essential component of a successful conviction.

The participant's responses were as follows, quoted verbatim:

"It means the number of breaks or nodes in the DNA of the sperms," (One-on-one participant 6). *"Professionally,"* (One-on-one participant 7). *"It is to be honest and have strong moral principles,"* (One-on-one participant 2). *"The exact form or way in which something (exhibit) was found no additions or subtractions,"* (One-on-one participant 3).

3.3.5 The Identification of DNA evidence

Taitz (1992:272-273) mentions that restriction fragment length polymorphisms (RFLP) is a common way to establish DNA fingerprints. The nine stages are as follows:

1. Chemical extraction of DNA from sample, for example, semen from clothing.
2. DNA is fragmented by restricting enzymes. DNA fragmentation cuts are unique, varying from individual to individual.
3. The length of DNA pieces are separated called gel electrophoresis.
4. The double strands of DNA are unzipped into single strands.
5. DNA strands change to nylon membrane; this stage is known as Southern blotting.
6. The DNA is inserted with a radioactive probe, known as hybridisation.
7. Hybridisation stage is exposed to X-ray film. Fingerprints appear on film, similar to a commercial bar code.

8. A hermeneutical link of DNA fingerprint is examined against that of the suspect or victim. Analysis is to be done by a computer converting bands into numerical codes to establish the similarity of patterns of two DNA –fingerprints.
9. Allele is assessed if there is odd occurrence from relevant sample population.

Robertson (1995:6) recommends that the ideal scientific identification system ought to entail the following:

1. Identification of uniqueness of features to person;
2. Features should be constant;
3. Two experts should reach the same conclusion;
4. Identification system should link the individual to the crime scene; and
5. The system should be cost effective and simple.

It can, therefore, be deduced that identification is a substance related to evidential material gathered at a crime scene. The researcher established that knowledge should be developed in that area of DNA identification.

The participant's responses were as follows, quoted verbatim:

"Biological material used to determine DNA," (One-on-one participant 6). No answer (One-on-one participant 4). *"Could have colour example blood or stain,"* (One-on-one participant 3). *"It is a forensic technique in criminal investigation where you compare a suspect to DNA evidence to assess the likelihood of their involvement in a crime,"* (One-on-one participant 2). *"Linked to a crime,"* (One-on-one participant 1). *"Observation,"* (One-on-one participant 10)

3.3.6 Understanding DNA Evidence

Fish, Miller, and Braswell (2011:141-142) states that DNA is located in chromosomes of the nucleic acid and unique genetic information is the personal blueprint of each individual comprising of nearly 3 billion pairs of chromosomes. It contains four

nitrogenous bases, adenine, guanine, cytosine, and thymine. DNA exists in the cell as double-stranded molecule. Gilbert (2010:279) mentions that no two individuals have the similar DNA sequence unless they are identical twins.

Researcher established that participants displayed an idea of the concept of 'DNA', whilst other participants could not define, elaborate or expound on this concept. It is, thus, clear that knowledge in this regard be developed. The participants still need schooling in this area, as a proper explanation was not calibrated to the explanation from the review literature.

The participant's responses were as follows, quoted verbatim:

"Evidence," (One-on-one participant 7). *"Investigators collect items that could have been touched or used in a crime,"* (One-on-one participant 6). *"Experts to identify,"* (One-on-one participant 7). No answer, (One-on-one participant 11). *"Secure scene of crime to check for evidence,"* (One-on-one participant 9).

3.3.7 Psycho-Social functioning of the forensic investigator

Faul & Hanekom (2010:13) define psycho-social functioning as: "the behavioural patterns of the individual in the different roles and systems that the individual forms part of in his/her environment. The individual acts with congruence among the four dimensions of his/her inner world to situations in his environment. The individual experiences himself/herself and his/her world on two different levels that relate to achievement, satisfaction and expectation on the one hand and to frustration, stress and helplessness on the other hand. Optimal psycho-social functioning assumes that the positive forces will be stronger than the regressive forces. The psycho-social functioning of the individual always takes place in a specific time frame that is integrated with the developmental phase in which the individual is functioning." According to Faul & Hanekom (2010:63), it is difficult to anticipate precisely what someone is going to do. Miller (2012) defines criminal psychology as "the application of the principles of normal

and abnormal psychology to the understanding, prediction, and control of criminal behaviour.”

The researcher established that participants had a vague idea about the psycho-social functioning of the forensic investigator. It is imperative that all participants be sensitised according to the review of literature regarding this concept.

The participant's responses were as follows, quoted verbatim:

“They may be called by prosecutor or defence attorney to evaluate defendant by providing a psychological assessment,” (One-on-one participant 6). *“Someone with an open mind and doesn’t get distracted easily,”* (One-on-one participant 3). *“Open minded,”* (One-on-one participant 2). *“Be focused,”* (One-on-one participant 9).

3.3.8 Locard Principle

Edmund Locard, a French forensic scientist and fingerprint expert, enunciated that:

- a. According to Pepper (2010:5) state that the transfer of an object to another is according to the Locard Principle.

According to Newburn (2007:320), the actions of a criminal will remain on a crime scene. This further corroborates the Locard Principle. Referring to the participants only few had an understanding of the ‘Locard Principle’. Enlightenment is thus needed in this vital area.

The participant's responses were as follows, quoted verbatim:

“Holds that a perpetrator of a crime will bring something into the crime scene and leave with something from it,” (One-on-one participant 6). *“Whenever a criminal leaves a crime scene he will always leave so trace behind,”* (One-on-one participant 4). *“In short*

it is where every contact leaves a trace,” (One-on-one participant 2). No answer, (One-on-one participant 7).

3.3.9 DNA preservation

Best practice for evidence management from the National Institute of Standards and Technology (2013:6-37) in the United States of America is given below:

- a. Wear Personal Protective Equipment (PPE) appropriately to prevent cross-contamination. PPE entails gloves, disposable overalls, laboratory coats, masks and eye protection.
- b. Evidence including dried evidence should be placed separately in a paper bag or breathable container that should be securely sealed without losing evidence. Biohazardous containers should be clearly marked as such. Evidence packages should be properly labelled with proper information.
- c. Evidence boxes can be used for bulky evidence. Ensure that boxes are not left open to prevent contamination.
- d. DNA extracts can be frozen and refrigerated. Crime laboratory can specify appropriate temperatures, etc.
- e. Long term storage for forensic importance of biological evidence investigation ought to be protected from contamination. Also such evidence should be safeguarded.
- f. Evidence may be disposed, destroyed, auctioned, returned to owner when case is complete, or no charge is affected. The SAPS also has proper method of evidence management.

Majority of participants displayed an understanding of preserving DNA evidence.

The participant’s responses were as follows, quoted verbatim:

“Blood to be fridged,” (One-on-one participant 10). *“Send to lab,”* (One-on-one participant 9). *“Put in blood bottle* (One-on-one participant 7). *“Chain of custody,”* (one-on-one participant 1).

3.4 Summary

This chapter (Chapter 3) discussed the presentation of data and interpretation of findings regarding the research. The participant's responses were analysed in terms of what was known and unknown, in terms of the questions asked during interview and response to interview schedule. The following chapter (Chapter 4) presents the recommendation and conclusion of this study.

CHAPTER FOUR: RECOMMENDATIONS AND CONCLUSION

4.1. INTRODUCTION

The bedrock of the CJS is justice. When gauging the situation, the variable of the degree of justice practiced amongst its custodians can be likened to a pendulum swinging to and fro from justice, to somewhere in between, to injustice, then back to justice. The researcher has partially established that the CJS, to a certain degree, is negatively dynamic with an unwelcome pendulum-like shift. This ought not to be the case, but, in the light of literature consulted, it is to a certain degree. Legally analysing the investigation, management and presentation of DNA evidence in court has led to certain undeniable gaps within the CJS. The miscarriage of justice is not based upon superstition but on legal fact. The down-regulation of neurogenesis has a bearing regarding criminalistics, and criminal behaviour in the phenotypic type of individual employed to carry justice to the community.

The state of mind in certain custodians is, ‘guilty until proven innocent’ yet hypocritically, defeat the ends of justice. Our legal system in South Africa does not propose such a doctrine. Our legal system in South Africa affords the accused the right to be ‘innocent until proven guilty’ beyond any reasonable doubt. The Constitution of the Republic of South Africa (108 of 1996) is to be upheld every time, allowing the accused the right to a fair trial and to be presumed innocent until proven guilty. This is just the way it is in South Africa, regardless of the immoral and unlawful deed committed. It may be a hard pill to swallow, but justice, take its own unique course, as noted in *Ditlhakanyane and others v S [2015] JOL 32817 (GJ)*.

The Constitution of the Republic of South Africa (108 of 1996) Section 35(5) provides: “Evidence obtained in a manner that violates any right in the Bill of Rights must be excluded if the admission of that evidence would render the trial unfair or otherwise be detrimental to the administration of justice.” Forensic scientists may be incompetent, unquestioning and, in some cases, downright fraudulent. Psychological assessments, is another interesting domain as well as brain anatomy regarding neuro-physiological criminal responses. These assessments could be on a yearly basis, building the mental

health of the police, especially in terms of justice. The researcher himself was a registered Specialist Counsellor. In this light, criminal investigations and criminal behaviour of the custodians of justice were explored and scientifically analysed.

The objectives of criminal psycho-social functioning, imbalanced crime scene management and the consequence of delict were explored. PPAT was coined by the researcher to aid in the mental faculties of custodians of justice on a primary health care level. This will improve the mental health care of police, stimulating morale.

This chapter will focus on how the phenomena of interest regarding aims and objectives were concretised. A summary of research methodology, limitations of the study, including the findings presented in chapter 3, will be contained in this chapter. Recommendations and possible areas for future research will be dealt with.

4.2 SUMMARY OF THE RESEARCH METHODOLOGY

“A legal analysis of the study of the scientific evidence of DNA” was a qualitative methodological approach which used a survey method to illicit opinions. To gain the big picture, the researcher listened to the ideas and personal experiences of participants. Questionnaires via electronic mail were distributed to participants due to their preference because of Corona Virus Disease 2019 (COVID-19). A multi-thronged approach, such as group interviews, could not be employed owing to COVID-19 challenges. Certain personal interviews were conducted during COVID-19 after obtaining consent from participants. COVID-19 safety protocols were strictly adhered to.

Chapter 1 indicated that the conduct of criminal investigators is to be reliable which would result in a quantum mitigation of dishonesty. The location for other research regarding analysing the study of scientific evidence of DNA was not available. The study commenced with a scientific analysis and management of DNA evidence. This research study commenced with a literature survey as well as criminal *modus operandi* of professionals. Data were sourced from eleven questions asked to participants

including other information gathered from participants in the duration of the interview process. The relevance of additional data complimented the aims and objectives of the study, and was thus used in the findings of the study. An analysis and evaluation of data were properly screened, enhancing the aim of the study. It was vital to establish the research findings owing to certain limitations of the study.

Various articles could be sourced regarding the maladministration of DNA evidence within the CJS. There was a limitation to the literature regarding the criminological motivation of the custodians of justice such as criminal investigators and mental health improvement assessments for police morale. COVID-19 was also a psychological challenge during the research.

SAPS employs psychologist to improving the mental health of police. More need to be done regarding building mental integrity within criminal investigators proactively. The code of conduct is brought to the attention of its personnel but there is a gap regarding screening, assessing, coaching and monitoring the mental ability regarding the morale of its criminal investigators with yearly assessments and monitoring tools regarding the mental health of police investigating crime.

4.3 DISCUSSION OF THE RESEARCH FINDINGS

The identification of the results and findings in Chapter 3 were hermeneutically in proportion with the identification of research questions in chapter 1. Correlating with the aims, the research explored the analysis of the scientific evidence of DNA by criminal investigators, whether it was to the benefit or detriment of justice. Secondly, the study explored the criminological psychological aspect of the police regarding criminal investigations and their exposure to psychological assessment tools which would benefit themselves and the desire of justice. Themes identified from the findings are:

- a. Although the polygraph test is unreliable in the absence of evidence *aliunde*, it will be good practice for criminal investigators to be subjected to the test;
- b. The SAPS have to think about being more of an evidence-based organisation rather than relying on uncritical approach to DNA evidence presentation in court;

- c. Every legal provision will be null and void when in conflict with the Bill of Rights;
- d. Unconstitutional evidence should be excluded even if relevant;
- e. Blood sample evidence management was defective because of time of receipt and analysis;
- f. The definition of integrity, according Merriam Webster.com, is adherence to a code of moral values: incorruptibility;
- g. Identification is related to evidential material gathered at a crime scene;
- h. DNA exists in the cell as double-stranded molecule;
- i. Psycho-social functioning refers to the behavioural patterns of people;
- j. The actions of a criminal will remain on a crime scene; and
- k. The SAPS have a proper method of evidence management.

Themes identified above will be addressed below.

4.4 ESTABLISHING WHETHER CRIMINAL INVESTIGATORS SHOULD BE SUBJECT TO POLYGRAPHIC TESTING

In order to achieve the first objective of the study, the question asked was whether SAPS experts and criminal investigators should be subject to polygraph testing. Polygraph testing verifies truth and is often called a 'Lie Detector Test'. In Chapter 3, the researcher correlated this with the case of *Shinga v Gilbeys Distillers and Vintners (Pty) Ltd*, where the Industrial Court considered evidence of a polygraph examiner, but later established the evidence as being unreliable. The court held that the polygraph test is unreliable in the absence of evidence *aliunde*. The court excluded tests as being unscientific owing to the operator's methodological performance.

The court did not entirely rule out the use of polygraph testing. The first theme identified will be elaborated upon as polygraph evidence may not be disregarded but should be weighed against evidence produced.

4.4.1 Criminal investigators and legal experts be subject to polygraph test.

According to, the South African Labour Guide: “There is no legislation at this point to control the use of the test or to protect the employees’ right against the abuse of the test”. The researcher’s emphasis is that employees’ rights ought to be constitutionally protected, not infringing the right to freedom. The researcher foresees that the polygraph test could be used to intimidate suspects to make a confession, which is unconstitutional owing to a breach of fairness. According to Kozel, Padgett, and George (1998), when lies are present, in comparison to the truth, there are five brain regions that are activated.

Sterbenz (2015) quotes George Maschke: “The public needs to know that polygraph testing has no scientific basis and is inherently biased against truthful people, yet liars can train themselves to pass.” Sweat, heart rate and blood pressure are monitored by electrodes and changes cause the needles to make lines on a paper which are analysed.

According to, the Polygraph Institute of South Africa: “In South Africa there is currently no legislation regulating the use of the polygraph. Therefore, there is nothing prohibiting or preventing the submission of polygraph results to corroborate other evidence in our courts of law. It is also legal to request employees to voluntary subject themselves to polygraph examinations....procedure comply with every respect with the contents of the Constitution and the Labour Relations Act.”

Reasons to use lie detectors for criminal investigators and legal experts are:

- a. Lie detectors may be used to screen the veracity of criminal investigators and legal experts;
- b. When there are traits of suspicion displayed by the criminal investigator;
- c. Displaying of fraudulent behaviour, forgery and dishonesty; and
- d. An innocent person can use the opportunity to be heard.

4.4.2 SAPS to play an important role to accept DNA evidence uncritically

Geldenhuys (2013:56) provides guidelines regarding crime scene management:

- a. Control and secure crime scene.
- b. Evidence and exhibits should be original and integrity ensured.
- c. Process crime scene undisturbed.
- d. There should be a proper record of facts and events.
- e. Crime scene to be under police protection.

Regarding the findings of this study, the role of SAPS is to critically analyse DNA evidence, ensuring originality, especially in the light of the Constitution of the Republic of South Africa (108 of 1996). From the literature, the identification of challenges can establish that there is a huge possibility that evidence is hypothetically taken for granted. Lack of criminal investigator psychological assessment tools, training and development in critical areas, such as legal opinion, critical reasoning skills and professionalism were also inclusive of challenges. Additionally, psychometric tests assist for recruiting purposes but are inconsequential for sustaining the investigator's professionalism. These factors are the essence for further exploration.

4.4.3 The admissibility of evidence

As mentioned in Snyman (2014:38), Section 35 Chapter 2 the Constitution of the Republic of South Africa Act 108 of 1996 contains the Bill of Rights. All law and all organs of the State, including legislature, executive and judiciary, are bound by the Bill of Rights contained in Section 35, Chapter two. Every legal provision will thus be null and void when in conflict with the Bill of Rights. Section 35(5) of the Constitution of the Republic of South Africa, 1996 clearly stipulates that evidence acquired in a manner that violates a constitutional right must be excluded in a trial. However, in this study the findings reveal that the concept 'admissibility of evidence' could not be precisely explained by certain investigators. It is, therefore, proposed in the research that such knowledge is highly beneficial. It was also established that there was a lack of ability to define the concept 'admissibility of evidence'.

In *S v Brown*, Bozalek J, ruled: "...the integrity of the ‘chain’ i.e. the evidence of safekeeping of the phone from the time that it was allegedly picked up by Cronje to the time that material was downloaded therefrom, had not been there, and could not be, proved;...that the evidence sought to be admitted was both hearsay and irrelevant; ...that such evidence was not covered by the terms of a subpoena issued by a magistrate in relation to the phone in terms of sec 205 of the Criminal Procedure Act, 51 of 1977:...in any event, any material downloaded from the phone without the authorisation of a magistrate was unlawful and an invasion of privacy....as a starting point, sec 35(5) of the Constitution provides that evidence obtained in a manner that violates any right in the Bill of Rights must be excluded if the admission of that evidence would render a trial unfair or otherwise be detrimental to the administration of justice. Generally speaking, where evidence is obtained without a warrant or direction, with an improperly obtained warrant or direction, or without following the conditions set out in the warrant or direction, a Court must decide whether to admit it or not....Section 3(4) of the Law of Evidence Act, 45 of 1998 defines hearsay evidence as evidence, whether oral or in writing, the probative value upon which depends the credibility of any person other than the person giving such evidence...."

The findings of the study, therefore, suggest that alternative training may bridge this gap. When the prejudicial value of evidence outweighs its probative value, it amounts to hearsay and is inadmissible. Another theme of the relevant knowledge of logic regarding proving or disproving a fact in a criminal matter surfaces, and this is whether it is obtained either done honestly or dishonestly. This issue will be addressed below.

4.4.4. The behavioural characteristics of an effective forensic investigator

In Chapter 3 the researcher provided a few behavioural characteristics of an effective criminal investigator, such as honesty, quality and morality. These characteristics reveal the psychological development of the criminal investigator. These areas are, therefore, vital regarding the psychological development of the criminal investigator which would determine whether the management of evidence presentation would be admissible in

court or not, and would also determine the Constitutional behaviour which may result in delict against the State.

The findings indicate that honesty is a vital attribute for a criminal investigator to maintain. Focus regarding the cognitive ability of the criminal investigator is paramount. According to Dunstan-Smith, Ripley-Evans, Harrison and Noriga (2019), South Africa possesses a matrix of offences regarding white-collar crime such as the common law offence of fraud. The Prevention and Combatting of Corrupt Activities Act 12 of 2004, (PRECCA), the Financial Intelligence Centre Act 38 of 2011 (FICA) and Prevention of Organised Crime Act (POCA) form part of the matrix that deals with white collar crime. The principal of the legislation of corruption in South Africa is PRECCA. POCA creates statutory offences such as racketeering, money laundering and offences relating to proceeds of unlawful activities. FICA combats white collar crime. A person in South Africa that suffered financial loss due to wrongful action can recover financial loss under the law of “delict” (tort). A wrongful act must cause harm whether intentionally or negligent. POCA focuses on forfeiture and confiscation, and the Asset Forfeiture Unit (AFU) ensures this.

The above example is provided as a guideline that criminal investigators are to sensitise themselves with these laws regulating behaviour. They have a direct reflection on ‘honesty’ as mentioned by the participants in Chapter 3. An honest approach, as pointed out in *S v Brown* and Dunstan-Smith, Ripley-Evans, Harrison, (2019), is best practice for the criminal investigator. These values have an impact especially regarding the morals of criminal investigators, who can appreciate the wrongfulness of an action and not act in accordance with their mental abilities. In Chapter 1, the scientific analysis of DNA in criminal investigation – to project towards the aim of the research regarding the ethical behaviour of investigation whilst protecting DNA evidence to secure a fair and just conviction - should be relevant to the investigator. Furthermore, this study emphasises that criminological theories be applied to the criminal investigator to gauge their morale, in *bona fide*. Psychological theories by Norberg, Thomas and the

American Psychiatric Association should be considered regarding the behavioural characteristics of a forensic investigator.

4.4.5 Management of DNA Evidence

Ingram (2012:282) concurred with the guidelines of Van de Walt (2000:351):

- a. Samples to be handled with gloves avoiding contamination.
- b. Cross-contamination to be avoided by changing gloves.
- c. Maintain good quality of DNA.
- d. Label, pack, seal and store samples below 4 degrees Celsius.
- e. Stained material to be air-dried.
- f. After samples are collected, immediately send to forensic science laboratory.

All participants had a very clear understanding of the management of a crime scene (see 3.3.3). These findings, therefore, denote that it would be inapplicable to further discuss this issue as the participants are very knowledgeable and have a clear understanding regarding this theme. Even though that is the case, it was pointed out in Chapter 3 that, in *S v Van der Westhuizen*, 1989, blood sample evidence management was defective because of the time of receipt and analysis.

The researcher deduces again that the analysis of DNA evidence must be impeccable.

4.4.6 Integrity

As highlighted in Chapter 3, integrity is an essential component to a successful investigation which is the role of the criminal investigator. In this study it was established that the majority of the participants did not know the definition of integrity (see 3.3.4). In the face of these findings, it is vital to know more about infusing 'integrity' as best practice in criminal investigations. According to the UN (2020), corruption is a serious impediment crippling the justice sector. One act in the criminal justice chain harms the whole process. An input of effort is critical in order for the State to address

this issue. Professional ethics, integrity, human rights, values and transparency should be continuously improved upon. There are no assessment reports indicating whether the criminal investigator is acknowledging accountability for actions of integrity. No research has been undertaken in SAPS regarding this matter.

This goal is not currently achieved in SAPS, as the researcher is not aware of any template form for assessments done with the criminal investigators, neither did the participants have any knowledge about this. For the United Nations requirements to be met and for the Code of Conduct requirements enlisted by SAPS to be optimally fulfilled, it can thus be concluded that no comprehensive template assessment form exists to monitor the trend of integrity displayed by criminal investigators.

It is also very unclear why no policy exists within SAPS to implement such assessments. Using documents that amount to 'read only' is not in the best interest of the criminal investigator and State; neither is it best practice. As pointed out in this research, the causation of criminal inclination is multi-dimensional, and it cannot be treated in a single-disciplinary fashion. Multi-dimensional problems need to be treated in a multi-disciplinary fashion. All Counsellors accredited by South African Qualifications Authority (SAQA) will be in a position to conduct these assessments and not to glorify any one counsellor above the next.

4.4.7 The Identification of DNA Evidence

As highlighted in Chapter 3, the role of criminal investigators is pivotal, especially regarding the management of DNA evidence which is eventually going to be presented in court. It was established in this study that certain participants were uncertain regarding the identification of DNA evidence (see 3.3.4). Regarding this revelation, it is vital to examine legislation regarding this important matter. According to de Witt (2011), DNA evidence is at the forefront of the arsenal of evidence. The legal fraternity ought to be conversant with the presentation of such evidence. The analysis of DNA presentation happens in the Biology Unit of the Forensic Science Laboratory of the South African Police Service. According to the Parliamentary Monitoring Group (PMG)

(2010): “Gaps in respect of the collection and use of fingerprint evidence had been identified...For any abuse of fingerprints or manipulation or tampering therewith the Bill provided for imprisonment to a maximum of 15 years, without the option of a fine.” DNA evidence is contained by the Criminal Law (Forensic Procedures) Amendment Act, 2013.

In *Nkwanyana v S*, Mbatha J, concluded: “....each and every person has unique DNA, save for identical twins, irrespective of where it is attained from that person’s body. At the Forensic Laboratory they make use of ten regions for DNA profiling. One is for gender determination and the other nine remaining regions are the ones that make one’s DNA unique from other persons....In most cases where sexual assault victims are killed, the DNA absolves or convicts the suspects in those cases....human beings have 46 chromosomes in the nucleus of each somatic or body cell. These thread-like structures are composed of linear arrangements of genes which, in turn, are made up of DNA (deoxyribonucleic acid). The DNA of each individual is unique, except for identical twins. A person’s DNA resembles that of his or her parents because one member of each of the 23 chromosomes pairs comes from the mother and one from the father. DNA can be extracted from cells taken from, skin, bone, blood, hair follicles, and semen. This DNA can then be used in laboratory tests to show a distinctive pattern of bands. This process is known as DNA fingerprinting. The pattern that is revealed can then be compared to determine whether there is a match. The testing process has to be executed and recorded with such care that it can be later verified by an objective scientist and a court of law. If the STR profile of an accused person in fact differs from the profile retrieved from the sample taken at the scene, even in respect of only one allele, the accused person must be excluded as a source of the crime scene DNA. It is not enough for experts opining on their interpretation on DNA evidence merely to reiterate the validity of the science behind DNA evidence. DNA evidence on its own may not be sufficient to establish the guilt of the accused. It has to be weighed against all evidence presented before the court. The collection, preservation and handling of DNA material are very important. This takes us to consider the chain of evidence as it appears on the record.”

It can, thus, be established that management of DNA and chain of evidence for the police to prove is, therefore, imperative according to the above case. It is interesting to summarise the Criminal Law (Forensic procedures) Amendment Act 37 of 2013, referred to as the DNA Act, in Chapter 1 of this study:

- a. The National Forensic DNA Database of South Africa (NFDD) regulates administration and maintenance;
- b. DNA profiles are used to prove innocence or guilt of persons, which have bearing on prosecution or exoneration;
- c. It applies to the taking of bodily samples listed in the 'Schedule 8' offences, included in the Criminal Procedure Act , 1977;
- d. There are conditions for retention and destroying of DNA evidence;
- e. The rights of women and children are protected;
- f. Specially trained police may take non-intimate samples;
- g. An Oversight Board will ensure ethical compliance;
- h. Police must be trained to identify, collect and preserve DNA evidence;
- i. Officers of the court must also be educated to differentiate between just conviction or exoneration of a suspect; and
- j. Comparisons will be made from the reference Index and Convicted index.

4.4.8 Understanding of DNA Concept

It was noted in Chapter 3 that not all participants could define, elaborate or explore the concept of DNA. DNA as mentioned in Chapter 1 is DNA. Gilbert (2010:279) mention that no two individuals have the similar DNA sequence unless they are identical twins. According to, the conclusion of Mbatha J: "A person's DNA resembles that of his or her parents because one member of each of the 23 chromosomes pairs comes from the mother and one from the father. DNA can be extracted from cells taken from, skin, bone, blood, hair follicles, and semen." The findings in this study clearly indicate what DNA is, and there is no confusion about the term. Not understanding the term can have consequential influence on the outcome of the investigation and a court's decision. The quality of the criminal investigator regarding cases involving DNA can be compromised.

Investigation of crime scenes ought to be thorough and proper. This area, therefore, requires investigation into the quality of criminal investigations.

4.4.9 Locard Principle

According to, Sammons (2015): “Locard’s exchange principle says that, in the physical world, whenever perpetrators enter or leave a crime scene, they will leave something behind and take something with them. Examples include DNA, latent prints, hair and fibers. Look at the numerous cold cases that are being solved now as a result of the significant advances in DNA science. Viewing a device or incident through the lens of Locard’s principle can be very helpful in locating and interpreting not only physical but digital evidence as well.”

In the light of this study, there is a real need for criminal investigators to be trained regarding this vital aspect of a scientific technique, as policing is an evidence-based science and it ought not to deviate from such a critical issue. The Locard Principle should be continually advocated in SAPS as this is indeed a pivotal issue regarding criminal investigation. Dishonesty again can distort the value of the ‘Locard Principle’ which is highly consequential.

4.4.10 DNA Preservation

The SAPS Learner Guide (2016:44) lists the best practices to avoid forensic contamination as:

- (a) Not to touch area where DNA may be located.
- (b) Not to cough or sneeze on exhibits.
- (c) Not to touch your face, nose or mouth when collecting or packaging exhibits.
- (d) Wearing gloves and changing gloves regularly.
- (e) Use disposable instruments and clean thoroughly before and after handling each sample.
- (f) Place exhibits in paper bags or envelopes before placing in evidence sealing bags.
- (g) Use the mask provided.

The SAPS has a thorough Learner Guide regarding the collection of DNA samples.

In the light of this study, the majority of the participants have the knowledge regarding the preservation of DNA evidence. There should not be any excuse for not knowing about 'DNA Preservation' as SAPS have several studies on this vital issue.

4.5 DETERMINING PSYCHOLOGICAL ASPECT OF THE CRIMINAL INVESTIGATOR AND EXPOSURE TO PSYCHOLOGICAL ASSESSMENT TOOLS

4.5.1 Psychological Aspect of Criminal Investigator

In Chapter 3 of the study, it was pointed out that everything we do is in the brain. Findings indicated that there was a vague idea in terms of the psycho-social functioning of the forensic investigator and others had no clue at all regarding this vital aspect of the criminal investigator, as this has much bearing on professionalism and the outcome of criminal cases in the court of law and not wasting State resources. The participants found this aspect very challenging indeed. Faul & Hanekom (2010:13) define psycho-social functioning as: "the behavioural patterns of the individual in the different roles and systems that the individual forms part of in his/her environment. The individual acts with congruence among the four dimensions of his/her inner world to situations in his environment. The individual experiences himself/herself and his/her world on two different levels that relate to achievement, satisfaction and expectation on the one hand and to frustration, stress and helplessness on the other hand. Optimal psycho-social functioning assumes that the positive forces will be stronger than the regressive forces. The psycho-social functioning of the individual always takes place in a specific time frame that is integrated with the developmental phase in which the individual is functioning."

4.5.2 Psychological Assessment Tools

This study noted that there are no assessment reports indicating whether the criminal investigator is acknowledging accountability for actions of integrity. This goal is not currently achieved in SAPS, as the researcher is not aware of any template form for

assessments done with the criminal investigators, neither did the participants have any knowledge about this. No comprehensive template assessment form exists to monitor the trend of integrity displayed by criminal investigators. It is also very unclear why no policy exists within SAPS to implement such assessments. Using documents that amount to check lists is not in the best interest of the criminal investigator, neither is it best practice. As pointed out in this research, the causation of criminal inclination is multi-dimensional and it cannot be treated in a single-disciplinary fashion. Multi-dimensional problems need to be treated in a multi-disciplinary fashion. All Counsellors accredited by SAQA will be in a position to conduct these assessments.

4.6 RECOMMENDATIONS

The Constitution of the Republic of South Africa (108 of 1996) clearly provides guidelines regarding the unconstitutionality of evidence presented in court. This is of paramount importance and needs to be amplified as the verdict of the court will have a bearing on this pertinent issue. The Constitution of the Republic of South Africa (108 of 1996) Section 35(5) provides: "Evidence obtained in a manner that violates any right in the Bill of Rights must be excluded if the admission of that evidence would render the trial unfair or otherwise be detrimental to the administration of justice." According to Naude, van der Merwe & Moodley (2011:2), the law of evidence teaches one how to go about proving one's case in court.

However, there are no psychological assessment tools to ethically guide the criminal investigator in scientific and credible investigation techniques. A one-dimensional view regarding the purpose of EHW in SAPS does help, but it is not appropriate enough to contribute to the psychological evaluation of the criminal investigator, which could be enhanced with an appropriate criminological assessment tool in a multi-disciplinary context. The lack of knowledge in scientific areas of criminal investigation, operational issues, ethical issues may not uphold the Constitution of the Republic of South Africa (108 of 1996). A police psychological assessment tool regarding the morale of investigating crime is lacking. Additionally, as has been proven and pointed out in this study, the criminological aspects of investigators themselves, and their psycho-social-

functioning, is alien to majority of participants in this study, thus contributing negatively to the ‘scales of justice’. In the light of this, the following recommendations are proposed.

The researcher recommends the following concepts to be developed regarding the prevention and identification of criminally-inclined behaviour through the contradiction of police professionalism, whilst investigating crimes related to the scientific analysis of DNA evidence. A culture of best practice, need to be inculcated, especially during evidence presentation led by experts in court. Ongoing development in the following areas is critical:

- Admissibility of Evidence;
- Integrity;
- Identification of DNA Evidence;
- Understanding the DNA Concept;
- Psycho-Social Functioning;
- Locard Principle; and
- DNA Preservation.

Owing to a lack of literature in certain areas of this topic the researcher recommends that research be investigated regarding:

- The psychological motivation of criminal investigators; and
- The admissibility of DNA evidence in the light of the Locard Principle.

4.6.1 Criminal Investigations to be Legal

As pointed out in section 2.1, DNA evidence should be critically challenged especially when tendered as forensic evidence. The integrity of biological evidence ought to be systematic within its legal framework paradigm. Anti-social behaviour, aggression and impulsiveness within the criminal justice system needs to be addressed to curb its cyclic pattern causing the State to lose billions of rand due to civil claims. Badenhorst (2020:115) characterise Antisocial Personality Disorder as illegal behaviour;

irresponsible; manipulative; impulsive; lying; dominating; provoke fear. More needs to be done to detect deception of personnel within the CJS, as personnel may appear normal, for it only to be found out at a later stage that the criminal element surfaces. As mentioned in section 3.3.4, certain participants did not comprehend clearly what 'integrity' is. This has direct bearing on the Constitution and the Code of Conduct of SAPS. Before crime scenes are entered, it is recommended that body-cams be utilised to record the original scene by the first responder accurately, and not at a later stage by Crime Scene Management, as this leaves a gap in determining the originality of the scene, and, therefore, a time period of the scene which is unaccounted for. These recordings can be used when evidence is to be critically evaluated, fulfilling part of the objectives of this research. One cannot assume what transpired between these two points. As mentioned, legal personnel within SAPS should be consulted pertaining to the lawful surrounding circumstances of investigating a crime scene credibly and in this way be guided accordingly. Extracting or planting objects on a crime scene is criminal, and unjust. It, thus, became very clear in this study that there are unjust and illegal acts within the CJS. It is recommended that supervisors monitor such processes and submit an affidavit as *prima facie* proof regarding how legal the scene was managed to the best of their knowledge.

4.6.2 Police Psychological Assessment Tool

In this study it was established that the majority of the participants did not know the definition of integrity (see 3.3.4). An honest approach, as pointed out by in *S v Brown* and Dunstan-Smith *et al.*, (2019), is best practice for the criminal investigator. These values have an impact especially regarding the morals of criminal investigators, who could then appreciate the wrongfulness of an action and not act in accordance with their mental abilities. In Chapter 3, it was pointed out that everything we do is in the brain. Choices made are due to the firing of neurons from the brain. Criminal investigators should be assessed annually in terms of honesty, and this should be done in good faith and not maliciously, as it would be to the benefit of the subject and SAPS, enhancing good morals. In Chapter 1, the scientific analysis of DNA in criminal investigation – to point towards the aim of the research regarding the ethical behaviour of investigation

whilst protecting DNA evidence to secure a fair and just conviction - should be relevant to the investigator. Furthermore, this study has emphasised that criminological theories be applied to the criminal investigator to gauge their morality, and this can be done by measuring the levels of honesty.

It is, therefore, recommended that serious attention be given to the assessment of the psychological faculty of criminal behaviour in order to gauge the level of integrity of the investigator, in a *bona fide* manner. The researcher has coined the acronym PPAT that can be administered to the police to enhance police professionalism proactively. This instrument does not need a psychologist or psychiatrist to administer it as it is on a primary health care level and can be done by any SAQA recognised counsellor/specialist in South Africa, if need be by referral to those other helping professions.

4.6.3 Current psychological assessment tools used for criminal investigators

It is with grave concern that this study has established that there are no current assessment tools used for criminal investigators to gauge morale and also provide intervention on such a basis. The SAPS provide psychometric tests and psychological debriefing which is one-dimensional. This is beneficial in its' own right, but does not have any consequence in the light of psychological assessments to enhance professionalism in criminal investigations. It is a matter of grave concern that currently there are no such psychological assessment tools used for criminal investigators in SAPS.

It is recommended that such instruments be put in place to enhance professionalism in policing. This ought to be best practice in SAPS. It is vital that the cognitive functions of the police be monitored continuously, in the light of the Code of Conduct in SAPS, instead of waiting for another police brutality or corruption complaint. Psycho-social functioning of criminal investigators is to be enhanced as recommended.

It is seriously recommended that such a policy be initiated and role-players be informed accordingly, and that a reading of the Code of Conduct or carrying the Code of Conduct is not so effective, but it is to be applied by monitoring the psycho-social functioning of the police through a psychological assessment in terms of honesty.

4.6.4 The need for skilled criminal investigators

As previously discussed, familiarisation of the *praxis* for skilled criminal investigators regarding their psycho-social criminological role was not adhered to. It is also evident that criminal investigators should be equipped as specialists themselves in the field of their domain. Criminal investigators are crime researchers focusing on investigative techniques in *praxis*. Criminal investigators are sent for detective courses and other investigative courses, but, in spite of this, flaws are located. It was established that a void was obvious in certain aspects of their training, especially in criminology and psychology. There is a dire need to understand intra-physiological aspects of a human being, as this would enhance professionalism in the context of policing. It is recommended that the technique of criminal investigators be thoroughly enhanced, and corrective action be set in place, to achieve the object of justice.

4.7 RECOMMENDATIONS FOR FURTHER RESEARCH

Based upon the findings of this study, including consulted literature, the identification for topics regarding possible research are as follows:

- (a) It is hereby suggested that further qualitative research be done regarding a legal analysis of the study of the scientific evidence of DNA in other provinces of South Africa. This may provide a broader spectrum of the subject's generalisation.
- (b) It is suggested that further research be conducted regarding the exploration of the criminal capacity of criminal investigators and psychological instruments to enhance the capacity of justice within the criminal investigator of SAPS.

4.8 CONCLUSION

Although the Constitution of the Republic of South Africa (108 of 1996) stipulates certain conditions regarding evidence as well as the DNA Act and it is evident that its purpose is to protect evidence just and fairly, there are certain grave concerns that require urgent attention and revision. Facts identified in this study did not reflect the attainment of justice, as it should be. Innocent people cannot go to jail and suffer psychologically, resulting in complex post-traumatic disorders, caused by custodians of justice. This is no gospel to pass down to society. Something has to be done to curb psychological mishaps in the CJS, the miscarriage of justice. Proper instruments must be developed and utilised to enhance ethics in the police. Recommendations regarding the problem have been mentioned and certain limitations of this study pointed out. Finally, areas of possible future research were also addressed.

The discourse of the research study included the definition of various concepts and what legal opinion suggested and was critically analysed. This was conducted to gain a hermeneutical perspective of the scientific analysis of DNA in criminal investigation, critically. In Chapter 2, the researcher presented a thorough investigation of the scientific management of DNA evidence. This provided a foundation for further analysing the research in Chapter 3 through literature review, case law and interviews.

The researcher has benefitted from the knowledge of this research. An anticipation would be that, criminal investigators be subject to yearly psycho-social assessments which will develop their morale more positively, fulfilling the Code of Conduct of SAPS, and constitutionally sharpening their investigative techniques regarding DNA evidence. Civil litigation against the State will decrease as progress is made in the exploration of these dynamics. A body camera system be implemented and utilised by criminal investigators before entering a crime scene, to corroborate the veracity of their evidence presentation in court.

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The Constitution of South Africa (Act No. 108 of 1996)

**ANNEXURE A: SAPS PERMISSION TO CONDUCT
RESEARCH**

South African Police Service



Suid-Afrikaanse Polisiediens

Privaatsak Private Bag X94	Pretoria 0001	Faks No. Fax No.	(012) 334 3518
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Your reference/U verwysing:

My reference/My verwysing: 3/34/2

THE HEAD: RESEARCH
SOUTH AFRICAN POLICE SERVICE
PRETORIA
0001

Enquiries/Navrae: Lt Col Joubert
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Mr LD Harry
UNIVERSITY OF SOUTH AFRICA

**RE: PERMISSION TO CONDUCT RESEARCH IN SAPS: A LEGAL ANALYSIS OF THE
STUDY OF THE SCIENTIFIC EVIDENCE OF DEOXYRIBONUCLEIC ACID (DNA):
UNIVERSITY OF SOUTH AFRICA: MASTERS DEGREE: RESEARCHER: LD HARRY**

The above subject matter refers.

You are hereby granted approval for your research study on the above mentioned topic in terms of National Instruction 1 of 2006.

Further arrangements regarding the research study may be made with the following office:

The Provincial Commissioner: KwaZulu-Natal:

- **Contact Person:** Col AD Van der Linde
- **Contact Details:** (031) 325 4841/4946
- **Email Address:** vanderLinde@saps.gov.za

The Provincial Commissioner: KwaZulu-Natal has stressed that participation in interviews will be on a voluntary basis and respondents may refuse to answer questions implying sensitive information.

Kindly adhere to paragraph 6 of our attached letter signed on the **2019-11-20** with the same above reference number.

MAJOR GENERAL
THE HEAD: RESEARCH
DR PR VUMA

DATE: 2020 -01- 23

ANNEXURE B: UNISA ETHICAL CLEARANCE

UNISA 2020 ETHICS REVIEW COMMITTEE

Date: 2020:12:08

ERC Reference No. : ST148-
2019

Name : LD Harry

Dear Lionel David Harry

**Decision: Ethics Approval from
2020:12:08 to 2023:12:08**

Researcher: Lionel David Harry

Supervisor: Dr DQ Mabunda

A Legal Analysis of the study of the Scientific Evidence of DNA

Qualification: MA Criminal Justice

Thank you for the application for research ethics clearance by the Unisa 2020 Ethics Review Committee for the above mentioned research. Ethics approval is granted for 3 years.

The **Low risk application** was **reviewed** by the CLAW Ethics Review Committee on 8 December 2020 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment.

The proposed research may now commence with the provisions that:

1. The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa Covid-19 position statement on research ethics attached. Provisional authorisation is granted.

2. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the UNISA Policy on Research Ethics.

3. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the CLAW Committee.

4. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
5. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of **participants' privacy and the confidentiality of the data, should be reported to the Committee in writing**, accompanied by a progress report.
6. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal **Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.**
7. Only de-identified research data may be used for secondary research purposes in future on condition that the research objectives are similar to those of the original research. Secondary use of identifiable human research data require additional ethics clearance.
8. No field work activities may continue after the expiry date **2023:12:08**. Submission of a completed research ethics progress report will constitute an application for renewal of Ethics Research Committee approval.

Note:

The reference number ST 148-2019 should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.

Yours sincerely,

Prof T Budhram
 Chair of CLAW ERC
E-mail: budhrt@unisa.ac.za
Tel: (012) 433-9462

Prof M Basdeo
 Executive Dean : CLAW
E-mail: MBasdeo@unisa.ac.za
Tel: (012) 429-8603

ANNEXURE C: EDITOR'S REPORT

The Reverend David Swanepoel
BA (Rhodes), Hons BA, Hons BTh, HED (SA)
Unit 2
Haven Village Retirement Centre, 269 Emmie Hartmann Street, Garsfontein, Pretoria, 0081
South Africa
Telephone +27 (0)72- 2077727
Email: davidswanepoel@wol.co.za

17th November 2020

TO WHOM IT MAY CONCERN

This is to certify that I have completed the English Editing, as far as its coherence allowed, of
the text of a dissertation to be submitted in accordance with the requirements for the
degree of

MASTER OF ARTS IN CRIMINAL JUSTICE
in the subject
CRIMINAL JUSTICE
at the
UNIVERSITY OF SOUTH AFRICA

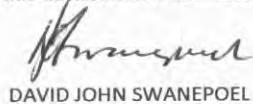
The dissertation is entitled

A LEGAL ANALYSIS OF THE STUDY OF THE SCIENTIFIC EVIDENCE OF DNA

By LIONEL DAVID HARRY

I am qualified to have done such editing, being in possession of a Bachelor's degree in English from Rhodes University, Grahamstown, an Honours Degree in English and HED with English as prime teaching subject from the University of South Africa, and having taught English to Matriculation, First Year University Level, GCSE and A level in both South Africa and the United Kingdom of Great Britain for over 40 years, as well as having been Senior (English) Associate Editor of a national magazine for two years. I have edited Master's Dissertations and Doctoral Theses for several years for several universities and institutions in South Africa and abroad as well as editing documents/papers for publication for various publishing concerns and a number of international academics.

I trust that this declaration is satisfactory.



DAVID JOHN SWANEPOEL

ANNEXURE D: TURN-IT-IN REPORT

12/2/2020

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