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THE RELIABILITY OF WITNESSES:

A PSYCHO-LEGAL ANALYSIS

by

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Prepared under the supervision of Dr C. Grobler

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DECLARATION OF ORIGINALITY

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SYNOPSIS

In this psycho-legal analysis, the focus is placed on the reliability of eyewitnesses, being the honest, unintentional errors made by witnesses resulting from the effects of various factors which influence the accuracy of memory. These factors are categorised as estimator or system variables. Estimator variables are those which cannot be controlled and the impact these variables may have on a witness can only be estimated. These variables are subcategorised as those which relate to the characteristics of the event, witness or accused. System variables relate to those factors over which the role-players in the justice system have some form of control and are subcategorised between retention interval and time variables. Both types of variables make an appearance during the perception, retention, and retrieval stages of memory. At the perception stage, the accuracy of the witness's observation is determined by event and witness factors. Memory in the retention stage is influenced by the events that take place after the event has been observed until the event is communicated by the witness at the recall stage. It is argued that recognition and knowledge of applied eyewitness research by fact-finders, law enforcement and legal practitioners is necessitated to ensure the expeditious and fair disposal of matters while minimising the risk of false convictions brought on by witness misidentifications. The use of eyewitness evidence will never be eliminated from the justice system, and so the proper understanding and application of applied eyewitness research will always remain relevant and indispensable.

KEY WORDS

Eyewitness testimony; eyewitness reliability; witness evidence; estimator variables; system variables; psychological eyewitness research; memory science

ON A PERSONAL NOTE

I have many people to thank for their support. My parents, who always know how to motivate me and relieve my stress. My Jabie, for always being my hype man and there for me in every way you can ever hope in a partner. Prof Gravett, for being the inspiration to this dissertation. Dr Grobler for taking the responsibility on her shoulders at such a late stage and, without knowing, carrying me through the finish-line.

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CHAPTER 1: CONTEXTUALISATION OF THE RELIABILITY OF WITNESSES

1.1 INTRODUCTION

In South African courts, whether during a civil or criminal trial, the objectives of the presiding officer are to ascertain the true facts of the case at hand insofar as there may be conflicting versions, and to make determinations on questions of law when and if they arise.[1] Based on the adversarial nature of the South African legal system, in order to determine the accuracy of facts, evidence must be led by each respective party to support and prove its version, which evidence can take various forms. In this psycho-legal analysis, the focus is placed on the reliability of the evidence led by witnesses in their oral testimony. Applied eyewitness research most often is created with the aim of being used by fact-triers and other interested players to better their understanding of the field, and with the goal of minimising the risk of false convictions and maximising the prospect of convicting the guilty.

The purpose of witness evidence is to provide the court with relevant, objective information on the course of events surrounding the case being adjudicated. It is therefore of utmost importance that the evidence is true and accurate.

This dissertation focuses on reliability and not credibility, as the issue of determining a witness' veracity entails delving into an individual witness' character and an individual judge's ability to read this character accurately. Rather, this psycho-legal analysis intends to hone in on the unintentional, honestly erroneous tendencies of a person during the various stages of perceiving an event, retaining the information gathered at perception, and retrieving the memory, respectively. What has become an important driver of research in this field is the evident lack of knowledge possessed by an average non-expert, including students, law enforcement, judges and jurors, of the

[1] It is important to note the difference between the concepts of "formal legal truth" and "substantive truth". The former is what courts deem as being the truth (or the true facts of a case) for purposes of adjudicating the matter. "Substantive proof" is the actual truth and should ideally accord with the formal legal truth as closely as possible. See Summers, R. S. (1999). Formal legal truth and substantive truth in judicial fact-finding: their justified divergence in some particular cases. *Law and Philosophy*, 18(5), 498 for a more in-depth discussion in this regard.

factors that affect the reliability of an eyewitness' evidence.[2] In fact, it was determined in a 1986 study by Huff, Rattner, Sagarin, and Huff (which conforms with multiple studies before and thereafter), that erroneous eyewitness identification is the principal cause of wrongful convictions in the US by far. [3,4] This is especially so for cases that were tried before the introduction of DNA testing.[5] It can be argued to imply that, in the majority of these studied cases, courts and law enforcement alike were so uninformed of the factors that affect an honest eyewitness' reliability, that they may have disregarded the contrary or lacking evidence to the extent that an innocent person was convicted.[6] Even in South African courts, as is discussed in the case studies herein, there is a clear inconsistency or misuse of existing memory science and eyewitness reliability research.[7] The use of eyewitness evidence will never be eliminated from the justice system[8], so it is in light of the pernicious effects that misjudging or underestimating the effects of these factors can have on an accused person and society as a whole, that in-depth studies are decidedly necessitated.

1.2 PROBLEM STATEMENT

The pernicious effects referred to above have largely been brought on – as it will be illustrated in this dissertation – by the lack of knowledge of eyewitness research by the stakeholders of the judicial system. These effects remain pervasive in circumstances where the role players of courts have knowledge of the factors that affect the reliability of an eyewitness' testimony, but these factors have inappropriately interpreted or applied eyewitness reliability research. It is clear that complex psychological processes take effect when an eyewitness is involved in legal proceedings, and as

[2] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 115.
[3] Huff, C. R., Rattner, A., Sagarin, E., & Huff, D. C. (1996). *Convicted but innocent: Wrongful conviction and public policy*. SAGE Publications, Incorporated.
[4] Monroe 2013 http://bit.ly/1TwThG0 (last accessed: 10 October 2022).
[5] Meintjes-van der Walt, L. (2009). Eyewitness evidence and eyewitness science: whether the twain shall meet. *South African Journal of Criminal Justice*, 22(3), 305.
[6] The Innocence Project website describes 216 of these studies' exoneration cases and can be accessed at https://innocenceproject.org/all-cases/ (last accessed 29 November 2022).
[7] See Chapter 6.
[8] Wells, G. L. (1978). Applied eyewitness-testimony research: system variables and estimator variables. *Journal of Personality and Social Psychology*, 36(12), 1547.

such the use of expert witnesses who specialise in this field of psychology in may be necessitated.

The need for exploration of eyewitness research is therefore identified insofar as it relates to the various factors that affect the reliability of eyewitnesses, in cooperation with the steps of memory processing. A further analysis of the manner in which expert witnesses' testimony is used in cases where eyewitnesses are involved is necessitated. Case law is then analysed in light of the eyewitness psychology research so explored, in order to identify where the issues have been addressed or must evidently be considered.

1.3 AIMS OF THE STUDY AND METHODOLOGY

By examining the existing research on eyewitness research and applying this research to existing legal practice and application, the dissertation aims to provide a clear psycho-legal analysis of the reliability of witnesses and its application to the South African legal system. This in turn will enable any fact-finder, law enforcer or legal representative to be equipped with the knowledge of how eyewitness reliability research must be applied during the course of investigating criminal matters, arguing these matters in court, and, finally, adjudicating a case accordingly. The aforementioned role players are also so enabled to determine whether there is a need for the use of expert witnesses in a particular matter where an eyewitness is involved.

In view of the fact that eyewitness research is psychological in its nature, a contextual psycho-legal analysis of the factors that influence eyewitness reliability is done, as well as the progressive steps of the memory process undergone by an eyewitness from the inception of the event to the deliverance of the eyewitness' testimony.

A critical psycho-legal analysis of the use of expert legal witnesses in South African and other legal systems is then performed. The same methodology is applied to analyse South African judgments, so as to ascertain whether the research, specifically estimator-variable research, is applied and, if so, to what extent such application is in line with existing research findings.

1.4 LIMITATIONS OF THE STUDY

It must be disclosed, however, that there is a want for empirical statistics drawn from the South African population with regard to eyewitness reliability. The quantity and quality of experiments and academic research in the United States of America far exceed the output of South African legal writers, and so mainly statistics based on the US population are cited herein. The different format of the US and South African court systems are therefore kept in mind.[9]

The extent of the eyewitness reliability research that is analysed, as well as the application thereof in courts, remains limited to that of adult eyewitnesses throughout. This dissertation does therefore not purport to include the reliability of all eyewitnesses.

1.5 STRUCTURE OF THE DISSERTATION

This dissertation will be divided into seven chapters. The current chapter contextualises the content of the dissertation in order to ensure that the reader is provided with an orienting overview in the form of an introduction, problem statement, the aims and methodologies that will be followed and the limitations to this study. The second chapter will provide an analysis of the meaning of reliability in the context of an eyewitness and explore the estimator and system variables which affect the eyewitness reliability. Chapter three discusses the first stage of memory processing, being perception, and aims to set out the factors which are involved during perception that influence the reliability of the eyewitness' memory during this stage. The fourth chapter is a discussion of the second and third stages of memory processing, retention followed by retrieval and the variables at play during these stages are analysed in

[9] For purposes of this study, it is important to note that American courts make use of judges, legal representatives and jurors. The role of the judges is similar to South African courts' magistrates or judges, as do the legal representatives in the respective court systems have the same purpose. The involvement of jurors during the proceedings, however, is not seen in South African courts. Jurors are laypersons from the US population summoned and sworn to decide the facts in issue at a trial. The American Bar Association provides a simple overview of the role of juries, which can be found at https://www.americanbar.org/groups/public_education/resources/law_related_education_network/how_courts_work/jury_role/ (last accessed on 29 November 2022).

order to identify to which extent their influence can be determined and limited. Chapter five analyses the use of expert witnesses in the South African and other legal systems and the extent to which expert testimony is accepted and applied by courts. Chapter six aims to identify the manner in which eyewitness reliability research has been applied by South African courts, and in so doing establishes whether there is a want for further or better application. The final chapter proffers a conclusion and sets out recommendations that have been made in studies dealing with these aspects.

CHAPTER 2: THE MEANING OF RELIABILITY AND THE APPLICATION OF ESTIMATOR- AND SYSTEM-VARIABLE RESEARCH

In this chapter, the meaning of the concept of reliability will firstly be explained in the context of eyewitnesses. This dissertation's aim is also put forward through the process of defining reliability, in that it will confine the extent of this study which only relates to the research that falls under the concept of reliability, which is distinguished from the concepts of credibility and veracity. Thereafter, estimator- and system-variable research is analysed in order to provide the complete context for its applicability to eyewitness reliability research and the stages of memory processing that will be discussed in chapters to follow.

The *credibility* of witnesses is constituted by veracity, on the one hand, and reliability, on the other.[10] A witness who lacks the former deliberately and intentionally provides false testimony, motivated by reasons such as a financial interest in the outcome of the matter, some form of emotional connection to a party who may be affected by the outcome, or in an act of self-protection.[11,12] A witness can be considered as lacking veracity when he is, has been, or may likely be untruthful during his testimony.[13] Measurement of veracity is simultaneously simple and highly complex.[14] The simpler mode of measurement is applying objective factors, such as previous convictions of perjury or if the witness is proven to have some form of interest in the outcome of the case, thereby rendering him unlikely to give evidence that would detrimentally impact that interest.[15] It is not a rule that a convicted perjurer's testimony must necessarily be rejected automatically, but he is surely subjected to be viewed with preliminary suspicion and distrust by the presiding officer.[16] The more complex mode of measuring veracity bases itself on the fact trier's ability to read a witness while he is giving

[10] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 32.
[11] See Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 32 for a fuller discussion on the veracity aspect of witness credibility.
[12] Also see Larick, R. P. (1993). Motivational Factors in Decision Theories: The Role of Self-Protection. *Psychological Bulletin*, 113(3), 440-450 for a better understanding of self-protection as a motivational factor.
[13] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 32.
[14] Unless indicated otherwise, any reference in this dissertation made to male also refers *mutatis mutandis* to other genders and *vice versa.*
[15] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 32.
[16] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 35.

testimony and detect whether he is telling the truth.[17] The presiding officer must be awake to inconsistencies in the testimony itself or in comparison to facts that have already been proven. Simultaneously, careful attention must be paid to the verbal and non-verbal cues that *could* indicate the witness is testifying dishonestly, which cues must not be over- or underestimated in their ability to actually indicate untruthfulness, rather than nerves, discomfort or the like.[18] Interesting research has been conducted into the average person's ability (or inability) to detect a liar when he sees one.[19] In short, the average person's chances of accurately spotting a lie are as good as their chances of flipping a coin and landing on tails.[20]

It is to say that an eyewitness that is veracious may not necessarily be reliable. A veracious eyewitness is truthful and, in every aspect, conducts himself with the utmost honesty and good faith. He believes in the accuracy and incontrovertibility of his testimony. Such confidence is often misplaced, although it may purport him to be more reliable to those assessing the value of his evidence.[21] What the eyewitness does not consider (or know to consider) is that the accuracy of his observations is dependent on largely uncontrollable and entirely unintentional influences.[22] The reality is that it is impossible for any person, even memory experts, to record every detail of an event as it happens before them.[23] The process by which an event is encoded into memory can be divided into three separate stages: perception, then retention, and finally, retrieval.[24] In summary: perception is the combination of the *biological processes* occurring in the observer himself, the physical surrounding circumstances, and the interpretation of what has been observed; retention is the process of *storing* the perceived events and this is where the influence of (mainly) post-event information

[17] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 36.
[18] See Gravett, W. H. (2018). Spotting the liar in the witness box – How valuable is demeanour evidence really? (1) *THRHR*, 81, 439.
[19] An in-depth analysis of the average person's ability to detect a lie within the judicial context goes beyond the scope of this study. For more resources on this topic, see Gravett, W. H. (2018). Spotting the liar in the witness box – How valuable is demeanour evidence really? (1) *THRHR*, 81, 437-450, and Gravett, W. H. (2018). Spotting the liar in the witness box – How valuable is demeanour evidence really? (2) *THRHR*, 81, 563-575.
[20] Rand, J. W. (2000). The demeanor gap: race, lie detection, and the jury. *Connecticut Law Review*, 33(1), 1-76.
[21] Gravett, W. H. (2018). Spotting the liar in the witness box – How valuable is demeanour evidence really? (2) *THRHR*, (81), 563-575.
[22] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 40.
[23] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 40.
[24] Meintjes-van der Walt, L. (2009). Eyewitness evidence and eyewitness science: whether the twain shall meet. *South African Journal of Criminal Justice*, 22(3), 315.

and misinformation effects play a role; retrieval is the last stage, during which factors which relate to the way the memory is *recalled*, operate.[25,26] These stages of memory processing will be more fully discussed in the chapters that follow.[27]

Depending on the purpose of the respective analysis, factors can also be grouped by dividing them into system variables and estimator variables.[28] These terms were set out by Gary Wells in his 1978 publication which is mainly relied upon in the discussion to follow.[29] In a broad sense, the former relates to the influence of uncontrollable factors, such as the witness' biases, characteristics, and the physical circumstances surrounding the event, which have been shown to be comparatively overestimated.[30] The latter, of which the impact on memory is often found to be underestimated, concerns more controllable variables *inter alia* the procedures used by law enforcement to collect identification evidence during questioning or line-ups.[31] Considering the controllability of system-variable research, it is arguably more constructive in its contribution to justice.[32]

2.1 ESTIMATOR-VARIABLE RESEARCH

The term "estimator variable" is drawn from the role of these variables in real-life. In criminal matters, these variables can, at best, only be estimated because they are outside of the control of the investigating officers or the court.[33] It is possible, however,

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[25] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 40.

[26] Loftus, E. F. (1996). Eyewitness testimony. *Harvard University Press*, 109.

[27] See Chapter 3 for a discussion on the perception stage and Chapter 4 wherein the retention and retrieval stages are discussed.

[28] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1546.

[29] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1546.

[30] Shaw, J. S., Garcia, L. A., & McClure, K. A. (1999). A lay perspective on the accuracy of eyewitness testimony. *Journal of Applied Social Psychology*, 29(1), 52-71 and Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 119.

[31] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. J*ournal of Personality and Social Psychology*, 36, 1552.

[32] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1555.

[33] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. Journal of Personality and Social Psychology, 36, 1548.

for a court to apply its knowledge of these variables to approximate the likelihood that an eyewitness' testimony is accurate.

Three approaches are pinned down by Wells for using estimator variables in a criminal justice setting.[34] Firstly, the conditions that affect the eyewitness' accuracy are identified, 'plugged in' to the specific case, and an informed estimation is then derived as to the level of accuracy the testimony may be offering.[35] Another approach is to appoint an expert witness, such as a psychologist, to provide testimony on estimator-variable research in general and accordingly warn decision-makers against accepting certain types of testimony.[36] One can also take a more generalised approach by accepting at the outset that eyewitnesses are not reliable, as these variables will inevitably have an impact on all eyewitnesses in nearly any given situation.[37] Irrespective of which approach is applied, estimator variable research cannot affect the accuracy of an eyewitness' testimony itself.[38] Instead, the application of such research will always be subject to the limitation that it only serves its purpose after the fact in that the decision-maker's knowledge thereof will decide to what extent he relies on the testimony.

Estimator variables can be categorised under those which relate to the characteristics of the criminal event, defendant (or accused), or witness.[39] As is the nature of this type of research, the list of variables under these categories will continue to evolve as the field of research progresses. It is important to note that variables do not always fall squarely into a single category. Certain factors may bleed over into both types of variables or categories, depending on how they are interpreted or the specific scenario to which they are applied.

[34] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1548.
[35] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1548.
[36] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1548.
[37] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1548.
[38] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 40.
[39] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1548.

The factors which fall under the characteristics of the criminal event include the seriousness of the crime, the amount of time the witness is exposed to the relevant event, the complexity of the event, and the witness' familiarity with the surroundings that form the context of the event.[40] In the majority of cases, one instinctively assumes the general correlation trend that forms between these factors and the accuracy of the eyewitness' testimony. For example, it seems logical that the more serious the crime is, the more heightened a person's senses would be and so the witness will likely better perceive and retain the memory of a serious crime. Interestingly, however, some controversial research has suggested that this trend may actually be curvilinear.[41] In other words, the seriousness of the crime might reach such a high level that it interferes with information processing or a witness purposefully avoids "getting involved".[42] Some deeper psychological processes at play are the mind's tendencies to block a traumatic memory in an attempt at emotional self-preservation.[43] In a case where the event is more complex, it is suggested that such heightened complexity might improve perception, but decrease the witness' ability to recall the event when he is later questioned.[44] Lastly, a witness who is not familiar with the surroundings will likely struggle to recall details of the size, distance and speed of objects that play a role in the event.

Arguably, the most researched estimator variable relating to the characteristics of the accused is race.[45] Even in the post-apartheid era, South Africans are far from free of

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[40] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1548.

[41] Leippe, M., Wells, G. L., & Ostrom, T. (1978). Crime seriousness as a determinant of accuracy in eyewitness identification. *Journal of Applied Psychology*, 3, 350.

[42] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1549.

[43] See the study of Larick, R. P. (1993). Motivational factors in decision theories: the role of self-protection. *Psychological Bulletin*, 113(3), 440–450, for a more in-depth analysis of self-protection as an estimator variable.

[44] Clifford, B. R., & Scott, J. (1978). Individual and situational factors in eyewitness testimony. *Journal of Applied Psychology*, 63(3), 356.

[45] Some of the most pervasive studies from a South African researcher's perspective are: Gravett, W. H. (2017). The myth of objectivity: implicit racial bias and the law (part 1). *Potchefstroom Electronic Law Journal*, 20(1), 1-25; Gravett, W. H. (2017). The myth of rationality: cognitive biases and heuristics in judicial decision-making. *South African Law Journal*, 134(1), 53-79; Gravett, W. (2018). Subconscious advocacy — part 1: nonverbal communication in the courtroom. *Stellenbosch Law Review*, 29(1), 3–24; and Gravett, W. (2018). Subconscious advocacy – part 2: verbal communication in the courtroom and ethical considerations. *Stellenbosch Law Review*, 29(2), 175–198. Other sources which also offer provide extensive race-related research in this context include Lockton, D (2012), `Cognitive biases, heuristics and decision-making in design for behaviour change', working paper, available at http://danlockton.co.uk and Kang, J.,

the biases that have been engraved into our society. Although the Bill of Rights has made historically impressive work of entrenching anti-discriminatory human rights, it is the implicit racial biases, those that persons still unintentionally apply, which remain. In the premise, cross-racial identification of a suspect by a witness is, as a general rule, less accurate than within-race identifications.[46] Similarly to some extent, the facial recognisability of an attractive person is reported to be higher than someone who is, by social norms, less attractive or unimposing.[47] Other examples include the accused's sex, as it may be perceived, which seems to have little effect on his or her identifiability except that female subjects are easier to remember by other females.[48] In earlier studies, it was submitted that the accused's age appeared to be insignificant.[49] More recent research, however, has concludes that, when com[pared to younger witnesses, elderly witnesses tend to make more correct identifications when identifying someone their own age.[50]

The characteristics of the witnesses which constitute estimator variables include their race and sex, and the perceptual interplay with the race and sex of the accused as discussed above. In addition, the witness' perceptual set is considered, which traditionally comprises those predispositions that cause a witness to perceive and interpret an event in a specific way.[51] In summary, it is the combination of all of the estimator variables applied to an individual witness within a specific context.

Bennett, M., Carbado, D., Casey, P., Dasgupta, N., Faigman, D. L., Godsil, R., Greenwald, A. G., Levinson, J. D., & Mnookin, J. (2012). Implicit bias in the courtroom. *UCLA Law Review*, 59(5), 1124–1186.

[46] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1550.

[47] Cross, J. F., Cross, J., & Daly, J. (1971). Sex, race, age and beauty as factors in recognition of faces. *Perception & Psychophysics*, 10, 393-396. Wells has raised his reservations about whether the way the study was conducted might have induced the subjects to perceive the faces they were asked to remember as attractive, thereby skewing the results.

[48] Cross, J. F., Cross, J., & Daly, J. (1971). Sex, race, age and beauty as factors in recognition of faces. *Perception & Psychophysics*, 10, 395.

[49] Cross, J. F., Cross, J., & Daly, J. (1971). Sex, race, age and beauty as factors in recognition of faces. *Perception & Psychophysics*, 10, 396.

[50] Dotson, J. T. (2014). The Lichpin of Identification Evidence: The Unreliability of Eyewitnesses and the Need for Reform in West Virginia. *West Virginia Law Review,* 117(2), 805.

[51] Cherry 2020 https://www.verywellmind.com/what-is-a-perceptual-set-2795464#:~:text=A%20perceptual%20set%20refers%20to,situation%20while%20ignoring%20other%20details (last accessed: 1 October 2022).

Wells goes further to suggest that general statements in the courtroom are risky.[52] An example of such a general statement would be to inform the court stakeholders that witnesses are generally inaccurate. These statements are not risky because they are general and not individualised to the specific case at hand, but rather because they involve "risky suppositions", such as the assumption that judges and jurors generally overestimate how accurate eyewitnesses really are.[53] In amplification of how risky this supposition is, Wells states that "there is no empirical evidence to support the assumption that jurors and judges are over-believing of witnesses".[54] However, since the article was published in 1978, research has suggested otherwise. In fact, there is a myriad of studies suggesting that people, including jurors and judges, are terrible lie detectors.[55] It is not to conclude that the general approach is flawless or the best approach to pursue, but it does suggest that it has more merit than Wells may have given it credit at the time.

2.2 SYSTEM-VARIABLE RESEARCH

System variables are termed as such due to their relevance and direct controllability in and by the criminal justice system.[56] The importance of system-variable research is that it provides a more proactive way to address issues in the criminal justice system relating to eyewitness testimony accuracy, rather than reactive as in the case of estimator-variable research.[57]

[52] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1551.
[53] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1551.
[54] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1551.
[55] See the studies of Deffenbacher & Loftus,1982; Kassin & Barndollar, 1992; Lindsay, 1994; Loflus, 1979; McConkey & Roche, 1989; Noon & Hollin, 1987; Rahaim & Brodsky, 1982; and, Yarmey & Jones, 1983.
[56] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1548.
[57] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1548.

Examples of system variables are categorised either under retention interval or testing.[58] It must be noted again that the system variables mentioned here are not exhaustive and supplementing or further subcategorisation is also possible.

System variables that fall under the retention interval category might, in certain circumstances, also be estimator variables. Time as a system variable, in this instance, relates to how long after the event occurred the witness is questioned.[59] Of course, in certain circumstances where the witness only comes forward at a later stage out of their own volition, it is not in the control of the investigators. In any event, it is widely accepted that the more time passes between the event and the questioning or testimony, the less reliable that evidence becomes as the memory tends to fade.[60]

Suggestive interrogation falls into the realm of the effects that post-event misinformation has on the reliability of an eyewitness' testimony.[61] In short, the retention of the memory is not tested here by the amount of time that passes, but by the information that the witness is exposed to during that time or while he is being questioned. The way the question is phrased when put to the witness, "how fast were the cars going when they *smashed* into each other?" versus "how fast were the cars going when they *bumped* each other?", is shown to have a likely influence on the answer provided.[62] It is submitted that the terminology used – the severity of the crash insinuated by the verb used in the question – influences the witness' memory in such a way that the witness testifies that the crash was more severe. The next retention interval variable is composite drawings and relates to the effect that giving such an open task to the witness may have.[63] A study by Hall and Ostrom found that, where subjects created a composite drawing with an artist of the face they were shown prior, those subjects were far more likely to erroneously identify a person in a line-up,

[58] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1552-1554.
[59] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1552.
[60] Meintjes van der Walt, L. (2016). Judicial Understanding of the Reliability of Eyewitness Evidence: A Tale of Two Cases. *PER / PELJ*, 19, 12.
[61] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. Journal of Personality and Social Psychology, 36, 1552.
[62] Loftus, E. F. (1996). Eyewitness testimony. *Harvard University Press*, 94.
[63] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1553.

irrespective of whether the person who they were initially shown was actually present in the line-up or not.[64] Similarly, being exposed to mug shots before the line-up may also lead to false identification by subjects, who tended to incorrectly select the persons they saw in the mug shots even though they were not the same strangers they were shown and told they would have to identify again before.[65] According to Wells, this may suggest that the simple act of exposing a witness to a mug shot before a line-up negatively impacts and influences that witness' memory at recall.[66]

Under the testing category, the role played by the way in which a question is structured to a witness is raised from a different perspective. Here, the accuracy of free elaboration by a witness without questioning is compared to the quality of the testimony received through open-ended questioning, leading questions, and multiple-choice questions.[67] The accuracy of the witness' testimony was the highest when he was given the opportunity to provide his evidence freely, and with each stricter form of questioning structure, the accuracy decreased significantly.[68] Line-up instructions are also of particular importance in the attempt to minimise false identifications.[69] Again, the introduction of suggestive instructions plays a significant role in the eyewitness' ability to recall his memory accurately, i.e. by informing the witness that the suspect is in the line-up, he is more likely to falsely identify a person because he chooses the person who looks most like the person he remembers despite the actual "culprit" not even being present.[70] The influence of the line-up structure is most interesting; The effect of sequential versus simultaneous line-ups is compared, and it is found that a witness is twice as likely to falsely identify a suspect when presented with the latter

[64] Hall, D. F., & Ostrom, T. M. (1975). Accuracy of eyewitness identification after biased or unbiased instructions. *Unpublished manuscript, Ohio State University* cited by Wells at 1553.
[65] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1553.
[66] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1553.
[67] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1553.
[68] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1553.
[69] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1553.
[70] Meintjes van der Walt, L. (2016). Judicial Understanding of the Reliability of Eyewitness Evidence: A Tale of Two Cases. *PER / PELJ*, 19, 12.

structure.[71,72] In fact, these findings were so compelling, that a number of police agencies have actually converted their line-up structures to be sequential as it clearly rendered a more accurate and defensible outcome.[73]

So, how does system-variable research find its application in the real world? It is submitted that it may be used as an estimator variable in and of itself during a trial. In other words, it can be argued that the statistics drawn from the studies within the field of research can be brought up during argumentation and used to assert that the testimony of the eyewitness is reliable or should be rejected. Realistically, system-variable research points raised during such an argument cannot be said to carry enough weight to justify the complete acceptance or rejection of the eyewitness' evidence in isolation, but it may have an effect on the weight of the evidence. The benefit of system-variable research is different to estimator-variable research in that it is able to take its effect proactively. System variables, by their nature, can be controlled by the parties who play a role in the investigation of a crime and during court proceedings. Consider the following: [74]

> *…system-variable research can be used to advocate short witness-testing intervals, fairer lineups, reduced use of composite drawings, and so forth. This gives the criminal justice system empirically derived tools with which to better the criminal justice process.*

Police agencies can change their line-up structures, interrogators can give eyewitnesses the opportunity to provide free and unrestricted statements based on their memories without prompt or suggestion, and legal representatives or state attorneys can question witnesses in a way that does not unintentionally (or intentionally) influence their recall of events. The salient conditions for system-variable

[71] Lindsay, R. C., & Wells, G. L. (1985). Improving eyewitness identifications from lineups: simultaneous versus sequential lineup presentation. *Journal of Applied Psychology*, 70(3), 561-562.
[72] The difference between sequential and simultaneous line-up structures are explained as follows: sequential line-up formats are where all the potential suspects are presented to the witness in a line-up at the same time. In sequential line-ups each potential suspect is presented to the witness one at a time. The witness is then requested to answer whether that individual is the culprit in question. See Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 119.
[73] Loftus, E. F. (2019). Eyewitness testimony. *Applied Cognitive Psychology*, 33(4), 500.
[74] Wells, G. L. (1978). Applied eyewitness testimony research: System variables and estimator variables. *Journal of Personality and Social Psychology*, 36, 1555.

research to make any meaningful change in courts are thus for the relevant players' to possess knowledge on how these variables influence the reliability of an eyewitness, and how to best apply this knowledge so as to render the testimony as accurate as possible as far as it is in each of their respective hands.

The categorisation of factors as estimator or system variables is evidently a prominent tool that can be used to assess what role a factor plays in any given scenario, specifically relating to how and to what extent it can be practically applied. Having cognisance of how important knowledge of these factors is and the ways in which an eyewitness' memory can be influenced, it is warranted that a different categorisation also be explored. The three stages of memory; perception, retention, and retrieval, also play a crucial role. Both estimator and system variables are present in all three of these stages, so it is beneficial to understand and apply the interplay of these variables and stages simultaneously.

CHAPTER 3: THE PERCEPTION STAGE

> There was, for instance, two years ago in Gottingen a meeting of a scientific association, made up of jurists, psychologists, and physicians - all therefore, men well trained in careful observation. Somewhere in the same street there was that evening a public festivity of the carnival. Suddenly, in the midst of the scholarly meeting, the doors open, a clown in highly colored costume rushes in in mad excitement, and a Negro with a revolver in hand follows him. In the middle of the hall first the one, then the other, shouts wild phrases; then the one falls to the ground, the other jumps on him; then a shot, and suddenly both are out of the room. The whole affair took less than twenty seconds. All were completely taken by surprise, and no one, with the exception of the President, had the slightest idea that every word and reaction had been rehearsed beforehand, or that photographs had been taken of the scene. It seemed most natural that the President should beg the members to write down individually an exact report, inasmuch as he felt sure that the matter would come before the courts. [75]

The results collected from the reports handed in by the unknowing participants of the above experiment were astounding. Forty reports were returned. Only one participant's report omitted less than 20 percent of the characteristic acts identified by the researchers prior to conducting the experiment. Fourteen participants omitted between 20 and 40 percent of the characteristic acts, twelve omitted 40 to 50 percent, and thirteen omitted more than 50 percent. Only six of the reports did not contain positively false statements. Twenty-four, more than halve of the reports, contained free inventions, and a quarter of the reports more than 10 percent of the statements were entirely false.[76]

Why is it that these scientifically trained observers would render such inconsistent and inaccurate reports of the same event? This chapter focuses on the first stage of memory processing, known as the *acquisition* or *perception* stage.[77] No two persons will acquire and store the memory of an event in the same way. There is a multitude of psychological factors at play which influence an individual mind's 'choices' on what elements it perceives at any given time which will be discussed herein. Loftus defines it as the stage at which "information is encoded, laid down, or entered into a person's

[75] Cited in Yarmey, A. D. (1979). *The psychology of eyewitness testimony*. Free Press, 163.
[76] Cited in Yarmey, A. D. (1979). *The psychology of eyewitness testimony*. Free Press, 163.
[77] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 21.

memory system".[78] The person experiencing the event, the witness, chooses consciously and subconsciously what elements of the event he will pay attention to.[79] The elements must be in the witness' perceptual range - close, bright and loud enough to actually observe.[80] The difference in perception of the same event between witnesses is a result of each individual witness' ability to acquire the memory accurately, which depends on two categories of factors: event factors and witness factors.[81] It is notable that both these factors consist of estimator variables. As such, although the research is of importance in the assessment of a witness' reliability, these variables are out of the court's control. The importance is therefore that the statistics surrounding these factors must be brought to the investigators', legal representatives', and fact-finders' attention. Knowledge of the tendencies suggested in these studies will not only assist these role players in assessing a particular witness' reliability but may also in so doing impact the system variables which can be controlled by asking thoughtfully structured questions in a minimally influential way during investigations and proceedings.

3.1 EVENT FACTORS

It is submitted that event factors are those variables which relate to the event itself being witnessed. It will become evident from the discussion to follow, that these factors are not inherently controllable by the witnesses.

Exposure time, an estimator variable also categorised by Wells as discussed above, is one of the factors with the most logical correlation to the accuracy of an eyewitness' memory.[82] Of course, as one would experience in everyday life, the longer a person has the opportunity to take in a face, scene or sign, the easier it is to remember that thing accurately. It has been tested in multiple studies, simply to confirm the scientists' intuitions (as one would find that actual results are sometimes different from what you

[78] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 21.
[79] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 22.
[80] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 22.
[81] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 22.
[82] Meintjes van der Walt, L. (2016). Judicial Understanding of the Reliability of Eyewitness Evidence: A Tale of Two Cases. *PER / PELJ*, 19, 10.

may expect them to be).[83] Similarly, a logical outcome is confirmed when the frequency is tested.[84] The higher the number of opportunities a subject is provided to observe a face or an object, the more accurately that face will be remembered and identified when asked to do so.[85] Surely this factor interplays with the former, as five observations of two seconds each amounts to a total observation time of ten seconds, which accuracy results will fare better than two observations of two seconds each. The question that remains, however, is whether the five two-second observations necessarily render more accurate results than a singular observation of ten seconds. In other words, is time exposure or frequency a more influential factor, and how would the combination of these factors interplay? Its is argued based on the research of memory coding that time is probably slightly more influential. Say, in a simple example you are standing on the roadside and a car drives past you at a slow speed. The car turns around and drives past you again. Each time the car passes you, you have the opportunity to observe the driver for a total of three seconds. It is submitted that one will observe the driver better and be able to identify him more accurately if the car stopped in front of you once, for an uninterrupted period of six seconds. The logical inference that is drawn is that, when you initially lay eyes on the driver, your brain takes a small moment to register and identify the object you are looking at as a face, after which the coding process begins and the various elements of that person's face are entered into your memory.[86] Should you have to do that twice instead of once, your brain has to go through that initial 'recognition' process twice, in effect slightly decreasing the time you are actually observing the driver's features and entering the memory.

Detail salience, being the noteworthiness of an element within the event, is also shown to have a probable influence on the witness' ability to recall that element accurately.[87] Although detail salience has an element of subjectivity to it, there are certain things that people would generally consider prominent. Loftus discusses a study conducted

[83] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 23.
[84] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 23.
[85] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 23.
[86] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 23.
[87] Marshall, J. Marquis, K. H., Oskamp, S. (1971). Effects of kind of question and atmosphere of interrogation on accuracy and completeness of testimony. *Harvard Law Review*, 84, 1631.

by Marshall, Marquis, and Oskamp in 1971.[88] In essence, this study concluded that subjects who were shown an event were on average 28% more likely to correctly identify items that were categorised as salient than those that were not.[89] The type of fact the witness is perceiving also plays a significant role in how accurate the observation may be. For example, should the type of fact be the estimation of the duration of a particular event, ample evidence indicates that people tend to overestimate time greatly.[90] Observations of other types of facts, such as faces, weight, shapes, and colours are based on a multitude of factors and cannot necessarily be prescribed such a general likelihood or level of accuracy.[91]

Loftus' discussion on the level of violence involved in an event as a factor is based on a 1978 study by Clifford and Scott, wherein it was suggested that non-violent events are perceived significantly more accurately than violent events.[92] The outcome of this study tends in the opposite direction of Wells' earlier discussion based on the work of Leippe and his colleagues (including Wells himself) also conducted in 1978.[93] Wells admits there are certain limitations to their study, being that their results of the effect are limited to circumstances where the witness knows how serious the crime is at the time of witnessing, and that it may be curvilinear.[94] Later studies make equally confusing findings, but a 2008 article by Paz Alonzo and Goodman on the correlation between trauma and memory seemed to make the most reliable suggestion in this regard.[95] In a highly distressing event, the main stressor is remembered with

[88] Marshall, J. Marquis, K. H., Oskamp, S. (1971). Effects of kind of question and atmosphere of interrogation on accuracy and completeness of testimony. *Harvard Law Review*, 84, 1620-1643.
[89] Marshall, J. Marquis, K. H., Oskamp, S. (1971). Effects of kind of question and atmosphere of interrogation on accuracy and completeness of testimony. *Harvard Law Review*, 84, 1633. In this study, the salience of an item was determined in accordance with the frequency with which that particular item was mentioned by the subjects. The more frequently the item is mentioned, the more salient the item is categorized.
[90] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 31.
[91] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 31.
[92] Clifford, B. R., & Scott, J. (1978). Individual and situational factors in eyewitness testimony. *Journal of Applied Psychology*, 63(3), 352–359, cited by Loftus at 31.
[93] Leippe, M., Wells, G. L., & Ostrom, T. (1978). Crime seriousness as a determinant of accuracy in eyewitness identification. *Journal of Applied Psychology*, 3, 345-351.
[94] Leippe, M., Wells, G. L., & Ostrom, T. (1978). Crime seriousness as a determinant of accuracy in eyewitness identification. *Journal of Applied Psychology*, 3, 350.
[95] Paz-Alonso, P. M., & Goodman, G. S. (2008). Trauma and memory: effects of post-event misinformation, retrieval order, and retention interval. *Memory*, 16(1), 58–75.

particularly impressive accuracy, while the peripheral details of the traumatic event are perceived less accurately than in neutral events.[96]

3.2 WITNESS FACTORS

Running parallel to the discussion relating to the level of violence of an event is the factor of stress experienced by a witness while perceiving that event. What is of specific importance from a legal perspective is the impact that the presence of a weapon may have on the ability of a witness to accurately perceive the identity of the person wielding the weapon or the surrounding circumstances. It is not to say that smaller crimes (such as petty theft or trespassing) are "less important". In reality, though, cases involving dangerous crimes committed by dangerous criminals inevitably carry the risk of a person's life being frightfully impacted if he is falsely convicted and sentenced for a crime he did not commit. The other side of the coin is that society risks being threatened by the freedom of someone incorrectly acquitted.

Johnson and Scott's study suggested that a witness will almost always accurately perceive and recall the presence of a weapon.[97] The problematic finding was that the weapon drew so much attention from the witnesses that there was a 16% reduced ability to accurately identify the target in comparison to the ability of the subjects who identified the target from a similar scenario where there was no weapon present.[98] This phenomenon is called *weapon focus* and has been confirmed in multiple later studies, one as recent as 2017.[99] In concluding this study, Carlson, Weatherford, Dias, and Carlson propose that police "could potentially" place their faith in a witness who identifies a suspect from a line-up and *immediately* confirms that he is confident in his

[96] Paz-Alonso, P. M., & Goodman, G. S. (2008). Trauma and memory: effects of post-event misinformation, retrieval order, and retention interval. *Memory*, 16(1), 72.
[97] Johnson, C. and Scott, B. (1976). Eyewitness testimony and suspect identification as a function of arousal, sex of witness, and scheduling of interrogation. *Paper presented at the American Psychological Association*, cited by Loftus at 35.
[98] Johnson, C. and Scott, B. (1976). Eyewitness testimony and suspect identification as a function of arousal, sex of witness, and scheduling of interrogation. *Paper presented at the American Psychological Association*, cited by Loftus at 35.
[99] Carlson, C. A., Dias, J. L., Weatherford, D. R., & Carlson, M. A. (2017). An investigation of the weapon focus effect and the confidence-accuracy relationship for eyewitness identification. *Journal of Applied Research in Memory and Cognition*, 6(1), 82–92.

choice. The good news is it appears from their findings that stressful characteristics of the crime, such as the presence of a weapon, become far less influential in the eyewitness' reliability when high confidence is indicated right after identification from a line-up.[100]

Expectations of the witness at the time of the event also play an important role in their reliability. Four types of expectations are provided by Loftus; firstly being cultural expectations or stereotypes; secondly expectations from past experiences; then personal prejudices; and lastly, momentary or temporary expectations.[101] A witness' perception of an event can be warped into their expectation in the presence of any of these aforementioned types. Of course, racial bias is of specific relevance in the first expectation type in the legal context. Cross-racial identification, as alluded to above, is shown to be less accurate.[102] The reason often proffered for this tendency to inaccuracy is that the features of black people (such as hair and facial structure) are generally similar.[103] This is an example of the stereotypes Loftus is referring to, but more sinister stereotypes also play an unfortunately effective role. For example, that black men are violent, that black people are thieves, or they are careless or destructive. Stereotypes such as these will cause a witness' perception of an event to warp into the expectation set by their implicit racial bias.

Gravett provides a hypothetical example: a white partner interviews a black candidate.[104] The white interviewer is displaying signs of behavioural leakage, showing less interest in the interview by not leaning forward, smiling, or making eye contact with the black interviewee. The black interviewee subconsciously reciprocates his interviewer's treatment. Due to the white interviewer's implicit racial bias, he sees the

[100] Carlson, C. A., Dias, J. L., Weatherford, D. R., & Carlson, M. A. (2017). An investigation of the weapon focus effect and the confidence-accuracy relationship for eyewitness identification. *Journal of Applied Research in Memory and Cognition*, 6(1), 90.
[101] Loftus, E. F. (1996). *Eyewitness testimony.* Harvard University Press, 37.
[102] See Chapter 2.1.
[103] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 37. Also see Blair, I. V., Judd, C. M., Chapleau, K. M. The Influence of Afrocentric Facial Features in Criminal Sentencing. *American Psychological Society*, 15(10), 674. Studies that analyse cross-racial biases between other races than those mentioned in this dissertation include Kang, J., Bennett, M., Carbado, D., Casey, P., Dasgupta, N., Faigman, D. L., Godsil, R., Greenwald, A. G., Levinson, J. D., & Mnookin, J. (2012). Implicit bias in the courtroom. *UCLA Law Review*, 59(5), 1124–1186 and Kang, J. (2005). Trojan Horses of Race. *Harvard Law Review*, 118, 1489-1593.
[104] Gravett, W. H. (2017). The myth of objectivity : implicit racial bias and the law (part 1). *Potchefstroom Electronic Law Journal,* 20(1), 1–25.

black candidate's behaviour in a way that correlates with his expectation of being "less collegial".[105] Referring to Kang and Banaji's research, Gravett states: "We human beings perceive information in ways that conform to our stereotypes… we are neither perceptually nor cognitively nor behaviourally colour-blind."[106] The consequences of a witness distorting his perception according to his implicit racial expectations are self-explanatory; the witness' testimony is rendered unreliable in that his perceptions do not only mismatch the true event but may cause the unfounded incrimination of a black person who bears no guilt. How does a court go about reducing the risk of such a witness causing these consequences? Perhaps through the presiding officer firstly being aware of the risk, and legal representatives making sufficient inquiry into the witness' personal circumstances and beliefs, where appropriate, in order to ensure the court is in the optimal position to assess to what extent the witness' testimony introduces such a risk.

The witness' perceptual activity, that is, the activity the witness is engaged in while experiencing the event, is interrelated with the expectation factor.[107] If a witness is told beforehand that he must make some superficial assessment of a target, such as their sex, the witness' accuracy tends to be significantly less regarding any of the target's other features.[108] Should the witness be asked to make a judgment on a deeper level, such as reporting on the target's perceived honesty or likeability, the witness is more likely to accurately identify the target at a later stage.[109]

In conclusion, the question asking why the reports of a group of well-educated and trained scientists rendered such inconsistent and inaccurate results is answered: event factors have different levels on influence on different people, and witness factors are constantly at play when a memory is initially acquired. It was discussed in this chapter how event factors such as exposure time, frequency, fact type, and level of violence involved in an event may affect the accuracy with which the event is perceived. At the

[105] Gravett, W. H. (2017). The myth of objectivity : implicit racial bias and the law (part 1). *Potchefstroom Electronic Law Journal*, 20(1), 14.
[106] Gravett, W. H. (2017). The myth of objectivity : implicit racial bias and the law (part 1). *Potchefstroom Electronic Law* Journal, 20(1), 16.
[107] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 48-50.
[108] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 48-50.
[109] Bower, G. H. and Karlin, M. B. (1974). Depth of processing pictures of faces and recognition memory. *Journal of Experimental Psychology*, (103), 269-279, cited by Loftus at 48.

same time, witness factors such as the stress level of the witness, the witness' predisposition or expectations from persons involved in the event, and perceptual activity is affecting the reliability of the memory being encoded into the witness' mind. Arguably, if an event is perceived incorrectly at the outset, the remaining stages of the memory process are rendered moot. Unfortunately, it is practically impossible to determine with certainty whether a witness perceived an event correctly. As such, the influences of the following stages must be considered to make an assessment of the witness' reliability as a whole. It is submitted, however, that legal enforcement, legal representatives and fact-finders must be aware of and apply their knowledge of these factors when assessing the reliability of a witness. One cannot simply rely on one's own intuition on how a factor ought to operate, as intuition and reality will not necessarily always correlate.[110]

[110] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 23.

CHAPTER 4: THE RETENTION AND RETRIEVAL STAGES

A memory acquired is then stored or *retained*, and ideally, that initial memory must maintain its integrity until it is later recalled. During the retention stage, however, "images [perceived] do not passively reside in the memory".[111] This chapter aims to explore the factors influences these final stages of memory processing in order to ascertain the extent of their effect and their applicability during the judicial process.

First and foremost, the factor which influences how well a memory is retained is the amount of time that passes between its perception and its recall. We tend to forget most rapidly right after perception, whereafter the forgetting curve flattens as time goes on. Marshall called this effect the "slippage of memory".[112]

A great claim to fame for Loftus is her ample research on the influences of what happens during the time the memory is retained - called *post-event information*. Sources of such information include, for example, the news or word of mouth.[113] The effects of post-event information can be one or any combination of enhancing the memory, changing the memory, or causing previously non-existent "memories" to be added.[114] Post-event information that enhances the memory refers to correct information provided to the witness that reminds him of some part of the event he may have forgotten. Changed (or *compromised*) memories are formulated when the information provided to a witness conflicts with his initially stored observations and instead admits this new information as his own, or at least allows it to alter his memory to some extent.[115] Loftus goes on to explain the findings of two of her previous studies.[116] In both cases, the subjects were more likely than not to compromise their memories at least somewhere halfway between what they perceived and what the post-event information suggested actually happened, deliberately or subconsciously.[117] The last possibility is that misleading post-event information can

[111] Nicholas, H. H. (1985). Credibility of witnesses. *South African Law Journal*, 102(1), 40.
[112] Marshall, J. (1966). Law and Psychology in conflict. *Bobbs-Merrill*, cited by Loftus at 54.
[113] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 55.
[114] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 55.
[115] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 56.
[116] The two studies are Loftus, E. F. (1975). Leading questions and the eyewitness report. *Cognitive Psychology*, 7, 560-572, and Loftus, E. F. (1977). Shifting human colour memory. *Memory and Cognition*, 5, 696-699.
[117] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 56.

introduce a “memory” that was never there, to begin with, into the initial memory.[118] For example, it was casually suggested to subjects in a question that there was a stop sign, where there was in fact a yield sign, in a series of pictures that depicted an auto-pedestrian accident.[119] Of the subjects, 75% who were not exposed to the misleading post-event information correctly identified the sign they were shown, whereas only 41% of the subjects to whom the false information was produced were able to accurately identify the street sign.[120]

As another example, a study by Tversky and Hutchinson was designed to settle a dispute concerning the effect of post-event information on the subjects’ memory of a specific set of slides.[121] The slideshow was the same sequence used in a previous similar study and depicted an office theft of a $20 bill and a calculator by a man who was called in to repair a chair. After viewing the slides, the subjects were provided with an unrelated seven-minute filler task and then given the opportunity to read a post-event narrative detailing the theft and the office's surroundings, but certain false details were introduced, unbeknownst to them.[122] A second unrelated seven-minute filler task followed. Questions relating to the incident were then put to the subjects and were only answerable as true or false. In the questions, the effect of the introduction of post-event misinformation was tested to ascertain whether the subjects were misled. The results clearly indicated that, for the subjects to whom false post-event information was introduced, they fared significantly worse than the control subjects who did not receive false information at any stage after viewing the slideshow. Interestingly, the subjects of the former group were more likely to say they had seen an item in the slideshow that was actually not there at all than they were to correctly reject the false information.[123]

The introduction of post-event misinformation can either be an estimator or a system variable, depending on the source of the misinformation. The majority of the research

[118] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 56.
[119] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 57.
[120] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 60.
[121] Tversky, A., & Hutchinson, J. W. (1986). Nearest neighbor analysis of psychological spaces. *Psychological Review*, 93(1), 3–22 cited by Loftus at 60. Due to the highly complex statistical nature of the research conducted by Tversky and Hutchinson, the summary of their research provided by Loftus if relied upon for purposes of this study.
[122] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 61.
[123] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 61.

is focused on the introduction of misleading information during questioning. In practice, should a police officer during questioning or a legal representative during examination in court proceedings be the source of such misinformation, it would constitute a system variable. What is almost entirely uncontrollable, is the witness' exposure to misinformation from the news or people in their everyday life. The witness' reliability is therefore easily affected during the retention stage, and so it is beneficial for a court to be cognisant or made aware of by the legal representatives, without necessarily being influenced by, any information being spread in the news or otherwise about a specific matter. In this way, the risk of a fact-finder unknowingly over-relying on unreliable eyewitness testimony, is mitigated. Of course, the fact-finder and legal representatives must be aware the risk exists in the first place. For example, during a multi-day trial, jurors are required to avoid the news and discussing the case with one another or other people.[124] It is submitted that a dual purpose is served; to ensure that the formation of the jurors' opinions on the accused's guilt is restricted to what has been laid before them as evidence during the proceedings, and to maintain the integrity of their memory of that evidence. They are, however, not witnesses *per se* and so the reliability of their memory does not fall within the scope of this analysis. The example serves to illustrate that the legal system appears recognise that receiving post-event information may influence the outcome of a person's perspective on a matter.

The final stage of the memory process is the recall or *retrieval* stage. According to Loftus, the accuracy of a witness' memory can be influenced by the way a question is structured.[125] If a question suggests the inclusion of a non-existent "fact", the witness may actually believe that fact to be true and answer the question accordingly. A witness himself can be the creator of "self-generated misinformation" and cause this information to reconstruct his own original memory.[126] An example provided by

[124] See the website of the American Bar Association where the roles and responsibilities of jurors are set out in a short and understandable way. The following is specifically relevant: "Once impaneled, the jurors' role is to listen to the evidence conscientiously and not draw premature conclusions. They are instructed by the judge not to discuss the case with outsiders or each other (until deliberations)." Access the page at https://www.americanbar.org/groups/public_education/resources/law_related_education_network/how_courts_work/juryselect/ (last accessed: 29 November 2022).

[125] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 88.

[126] Brigham, J. C., Wasserman, A. W. & Meissner, C.A. (1999). Disputed Eyewitness identification evidence: important legal and scientific issues, *Court Review*, 14.

Meintjes-van der Walt based on the work of Brown *et al*.[127], is when an eyewitness initially misidentifies a suspect from a line-up, that witness is likely to choose that same suspect at future identification procedures.[128] Interestingly, if that witness is told that they have correctly identified the suspect at the beginning stages of the investigation, this may also influence the witness to (make himself) believe that he viewed that suspect for a longer time during the event or overestimate the quality of event variables such as lighting.[129]

The retrieval stage involves the moment(s) when a memory is recalled from the mind and communicated by the witness.[130] Retrieval can take place multiple times, say, when the witness first tells their partner, again when they are questioned by the police, and again when they are examined by a legal representative during the court proceedings. This is important because statements that are made by a witness immediately after an event can induce what is called the "freezing effect".[131] If a witness reports a specific detail when questioned in the beginning stages it is likely that the same detail, even though it may be incorrect, will be repeatedly recalled thereafter.[132] South African courts offer to counsel the opportunity to test the truth during cross-examination and highlight inconsistencies or contradictions with other evidence.[133] In cases where the eyewitness is the only source of identification, such evidence must be treated with the utmost caution.[134]

The retrieval environment is essential to maximizing the accuracy of the recall of a memory.[135] Place yourself in your school days, if you will. The best environment for writing an exam is quiet, familiar and comfortable enough. It may be logically inferred that that the material you have studied is most easily and accurately retrieved in these

[127] Brown, K., Deffenbacher, W., & Sturgill, W. (1977). Memory for faces and the circumstances of encounter. *Journal of Applied Psychology*, 62, 311, cited by Meintjies-Van der Walt at 321.
[128] Meintjes-van der Walt, L. (2009). Eyewitness evidence and eyewitness science: whether the twain shall meet. *South African Journal of Criminal Justice*, 22(3), 321.
[129] Wells, G. L. & Bradfield, A. L. (1998). "Good, you identified the suspect": feedback to witness distorts their reports of the witnessing experience, *Journal of Applied Psychology*, 87, 112-120.
[130] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 84.
[131] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 84.
[132] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 84.
[133] Section 166 of the Criminal Procedure Act 51 of 1977.
[134] *R v Mputing* (1960) 2 All SA 31 (T).
[135] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 89-90.

circumstances. The manner in which a witness is interrogated also plays a role: allowing the witnesses to first freely narrate their experience is far more accurate than when the narrative is controlled through a strict, question-based structure.[136] Thereafter, should an extended range of information be required, specific questions can be asked in addition.[137] The wording of the question, excluding for a moment a question that suggests false post-event information, is also important. For example, asking a witness how tall the suspect was versus how short he perceived the suspect to be, or how long the vehicle took to come to a stop versus how short the amount of time was the vehicle took to stop. In both examples, the former wording is the normal way of phrasing a question relating to height or duration, but the latter phrasing implies a presupposition that the suspect was short or the vehicle quickly came to a halt.[138] In a 1973 study by Harris, some subjects were asked "How tall was the basketball player?" and the remaining subjects were asked, "How short was the basketball player?".[139] The answers averaged 79 inches and 69 inches, respectively.[140] When asked "How long was the movie?" the estimated answers averaged 130 minutes, while the question "How short was the movie?" rendered an average estimated answer of 100 minutes.[141]

Understanding the impact of these influences is of importance because they constitute system variables. It implies that interrogators, counsel and the court have the ability to control these variables, and so directly have the ability to improve the reliability of the eyewitness' testimony by taking the effects of these variables into account, asking their questions accordingly, and understanding the effects the application (or lack thereof) could have on the accuracy of the witness' testimony.

[136] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 93.
[137] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 93.
[138] Loftus, E. F. (1996). *Eyewitness testimony*. Harvard University Press, 93.
[139] Harris, J. A. (1973). Answering questions containing marked and unmarked adjectives and adverbs, *Journal of Experimental Psychology*, 97, 399-401, cited by Loftus 1979 at 94.
[140] Harris, J. A. (1973). Answering questions containing marked and unmarked adjectives and adverbs, *Journal of Experimental Psychology*, 97, 399-401, cited by Loftus 1979 at 94.
[141] Harris, J. A. (1973). Answering questions containing marked and unmarked adjectives and adverbs, *Journal of Experimental Psychology*, 97, 399-401, cited by Loftus 1979 at 94.

CHAPTER 5: THE USE OF EXPERT WITNESSES IN COURTS

The use of psychological expert witness testimony in court is analysed in this chapter in order to identify successes and shortcomings in the South African legal system. It is submitted that the use of expert witnesses is necessitated in order to safeguard courts from adjudicating matters where expert psychological explanations are required. So also the extent of the need for expert testimony is discussed in matters where the court is adequately able, based on existing knowledge and legal principles, to adjudicate a matter without the use of an expert.

In other jurisdictions, a Scottish court has rather recently held that psychologists or psychiatrists may not be allowed to testify as expert witnesses on the credibility or reliability of witnesses.[142] In the judgment of Lord Gill, it was stated:[143]

> Questions of credibility and reliability are pre-eminently matters for the tribunal of fact. Our system of jury trial proceeds on the basis that jurors, as people of ordinary intelligence and experience, are capable of assessing the credibility and reliability of a witness without expert assistance… It was accepted on behalf of the appellant that opinion evidence must not usurp the function of the jury.

To provide context from a South African perspective, in the case of *Holtzhausen v Roodt* the considerations for the admission of expert witness testimony were set out as follows: -[144]

> The approach is whether a court, by reason of its lack of special knowledge and skill, was not sufficiently informed to enable it to undertake the task of drawing properly reasoned inferences from the facts established in evidence.

The relevant principles, therefore, are: a) whether the expert's evidence is called for matters requiring specialised knowledge or skill; b) that the court's capabilities are not undermined in the provision of such evidence; c) that the particular expert is sufficiently equipped with the specialised experience and skill required; d) the facts upon which

[142] *Gage v HM Adv* 2011 HCJAC 40; 2011 SCL 645.
[143] *Gage v HM Adv* 2011 HCJAC 40, para 21.
[144] 1997 JOL 1416 (W).

the expert's evidence are based are proven by admissible evidence; e) the expert's evidence is relevant to the case at hand; and, f) the evidence should not usurp the function of the court.[145]

There are clear similarities between the requirements of Lord Gill and those set out by Satchwell J in the cases mentioned above. That is not to say, however, that South African courts will adopt the same approach under similar circumstances, as the court maintains its prerogative to determine the probative value of the expert's testimony and is, of course, not bound by the decision of the expert.[146] Further to this, the general rule is that experts may not be asked to provide the inferences they have drawn from the evidence in question.

Under certain circumstances, nonetheless, such expert evidence may be received by reason of the expert's particular level or type of experience, knowledge and skill, and so they are in fact better qualified to draw inferences than the court itself. Suggesting that the assessment of the reliability of a witness classifies as one of these "certain circumstances" is, however, unfitting in the South African (or arguably any other) legal system. The role of a court, whether it is presided by a judge, proceeds with or without the involvement of jurors, or has multiple presiding officers all at once, is to impartially and expeditiously examine the evidence before it and make a finding of fact and law based on that evidence. If it is accepted that a psychological expert is required in cases where a witness' reliability is called into question and that such an expert is generally considered to have sufficient knowledge and skill to be in a better position to draw inferences than the court itself, then the outcomes of the vast majority of criminal trials and a significant amount of civil trials will effectively be decided by psychological experts. This would be a clear usurpation of the court's function and cannot be applied. So, is an expert witness useful or necessary in court proceedings for assessing the reliability of a factual witness? And if so, when?

In an article by Benton *et al*., the knowledge of eyewitness experts was compared to the knowledge of judges, jurors, and law enforcement officers in a study conducted in

[145] *Gage v HM Adv* 2011 HCJAC 40; 2011 SCL 645.
[146] *Holtzhausen v Roodt* 1997 JOL 1416 (W).

Hamilton County, Tennessee.[147] The study was motivated by the unfortunately large percentage of wrongful convictions caused by eyewitness identification errors, and many jurisdictions' exclusion of eyewitness experts' evidence based on the assumption that the science is actually common sense. A survey consisting of 30 statements relating to eyewitness issues was completed by both experts and lay participants. The statements were divided between estimator and system variables. The subjects were able to answer whether they believed these statements to be 'generally true', 'generally false', or 'I don't know'.[148] The statements included *inter alia* issues such as those relating to the importance of how questions are worded, line-up instructions, mug-shot-induced bias, post-event information, cross-race bias, weapon focus, and the forgetting curve.[149] Jurors performed dismally and tended to disagree with the eyewitness experts on 26 out of the 30 statements (87%).[150] Judges and law enforcement were clearly more informed on the subject and both disagreed on only 18 of the 30 statements (60%).[151] Interestingly, the results indicated that the experts placed the most weight on the wording of questions and line-up instructions, while judges, jurors, and law enforcement were of the opinion that alcoholic intoxication was the most influential on witness reliability.[152]

The concluding remarks advocate strongly for the use of expert opinions in courts, based on the large divergence and notable limitations in the knowledge of judges, law enforcement, and (especially) jurors on eyewitness issues.[153] Although South African courts do not make use of jurors, it is submitted that these recommendations will find

[147] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 115.
[148] It is argued that the 'I don't know' option functions by excluding the possibility that a subject would simply guess the answer if they were not sure about whether it was true or false, which would effectively skew the data by subjects them a 50% chance of guessing correctly. See Couper, M. P. (2008). Designing Effective Web Surveys. *Cambridge, MA: Cambridge University Press* for an in-depth study on the effectiveness of using the 'I don't know' option during surveys to ensure effective results in research.
[149] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 120.
[150] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 119.
[151] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 120.
[152] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 121.
[153] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 125.

application within the South African legal system insofar as judges, law enforcement and legal representatives are involved. An indicator that recognition is emerging of the impact of education on the reliability of eyewitnesses in other legal systems, is the publication by the National Institute of Justice, *Eyewitness Evidence: A Guide for Law Enforcement*.[154] Another motivator for increasing awareness of the variables that influence eyewitness reliability was the finding that mock jurors who were informed of procedural infringements on the provisions of the *Guide* reduced their perceptions of the culpability of the accused, as did the conviction rates.[155] In addition, the mock jurors were more likely to challenge eyewitness credibility, and more likely to be suspicious of the prosecution's case.[156] Benton states: [157]

> In the continuous effort to reduce eyewitness error, and thus reduce the likelihood of wrongful convictions, the rest of the solution would seem to hinge on increasing the likelihood that testimony from eyewitness experts will be deemed admissible in cases where eyewitness evidence plays a pivotal role. The legal system needs to become aware that the scientific and technical underpinnings of eyewitness memory research are not only outside the purview of common sense but also sufficient to warrant the admission of expert testimony as scientific knowledge.

An important *caveat* worth considering is the generalised statistical nature of the findings drawn from eyewitness reliability research. As Nicolson *et al.* reminds us, the variables have an admittedly minute impact on the accuracy of an eyewitness'

[154] Technical Working Group for Eyewitness Evidence. (1999). Eyewitness Evidence: A Guide for Law Enforcement, U. S. Department of Justice, Office of Justice Programs. Available at https://www.ojp.gov/pdffiles1/nij/178240.pdf (last accessed 22 August 2022). A further training manual for law enforcement was also released by the National Institute of Justice in 2003, available at https://www.ncjrs.gov/nij/eyewitness/188678.pdf (last accessed 29 November 2022). The website of the NIJ Journal continues to publish articles relating to the issues of eyewitness testimony and reliability, including articles providing suggestions for betterment of these issues from within the judicial system. See for example: McGough, M. (2012). To Err is Human: Using Science to Reduce Mistaken Eyewitness Identifications Through Police Lineups, *NIJ Journal*, 270, 30-35 and LaPorte, G. (2018). Wrongful Convictions and DNA Exonerations: Understanding the Role of Forensic Science. *NIJ Journal*, 279, 1-16.

[155] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 126.

[156] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 126.

[157] Benton *et al* (2006). Eyewitness Memory is Still Not Common Sense: Comparing Jurors, Judges and Law Enforcement to Eyewitness Experts. *Applied Cognitive Psychology*, 20, 126.

memory, especially when considered in isolation.[158] Further, although there are general upward or downward trends which render the overall effect of certain variables undisputed, the curves remain imprecise.[159] Each case must be decided on its own, unique facts, and the gravity of the impact of any variable on an individual witness will differ somewhat from the general trends. Certain elderly witnesses could have spectacular memory, stress affects people differently depending on their background, and certain individuals are just not good at remembering faces, directions, or conversations. There are simply too many variables to safely make general scientific assumptions or predictions.

When an expert witness was called to give evidence on the meaning of a contract in *KPMG Chartered Accountants (SA) v Securefin*[160], an unimpressed Harms DP made clear the court's position on the extent to which an expert may give evidence:[161]

> An expert may be asked relevant questions based on assumptions or hypotheses put by counsel as to the meaning of a document. The witness may not be asked what the document means to him or her. The witness (expert or otherwise) may also not be cross-examined on the meaning of the document or the validity of the hypothesis about its meaning.

Although the case centred around contract law, the principle is applicable in that an eyewitness expert's testimony must be limited to that in which he has expertise. The purpose of the expert is not to provide the court with his inference on whether the particular witness in question is reliable or not, but rather to assist with his unbiased and objective opinion. The expert does not play the role of an advocate and, in the context of this type of research, a purely informative role with the goal to educate the court on the impact of variables which are at play *in casu* is more appropriate that an opinion on the accuracy of the specific witness' memory.[162]

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[158] Nicolson, D., Auchie, D. P. (2018). Duff, Peter R. (2018). Assessing witness credibility and reliability: engaging experts and disengaging Gage?. In Duff, P., Ferguson, P. (Eds.) *Scottish criminal evidence law: current developments and future trends.* (pp. 161–193). Edinburgh University Press.

[159] Nicolson, D., Auchie, D. P. (2018). Duff, Peter R. (2018). Assessing witness credibility and reliability: engaging experts and disengaging Gage?. In Duff, P., Ferguson, P. (Eds.) *Scottish criminal evidence law: current developments and future trends*. (pp. 161–193). Edinburgh University Press.

[160] *KPMG Chartered Accountants (SA) v Securefin Ltd* (2009) 2 All SA 523 (SCA).

[161] *KPMG Chartered Accountants (SA) v Securefin Ltd* (2009) 2 All SA 523 (SCA) at D1-491.

[162] *Schneider NO & Others v AA & Another* 2010 (5) 203 WCC at 211J-212B.

The balance is therefore somewhere in-between. One needs to avoid introducing expert testimony where it would usurp the function of the court or overburden the proceedings with irrelevant or unnecessarily technical psychological testimony, especially where the role of the eyewitness in a particular case is not decisive. On the flip side of the coin, the system must welcome the admission of such expert evidence when it is clear that it is relevant and that the specialised skill and knowledge will assist the court to come to a well-informed conclusion while cautioning not to allow the expert to make the inference himself.

CHAPTER 6: APPLICATION OF MEMORY SCIENCE BY SOUTH AFRICAN COURTS

In this chapter, three South African judgments spanning from 1960 to 2010 will be discussed with specific reference to their application of eyewitness research with the intention to assess whether South African courts know how to apply, and then correctly apply, memory science and established research on eyewitness reliability. Firstly, the 1960 judgment written by Boshoff R in the *Mputing*[163] matter shows an impressive and informed approach to applied eyewitness research. In the *Mathebhula*[164] case somewhat thirty-six years later, the exact same research of the former judgment is cited, but there is no evidence that the court possessed knowledge of or applied more recent evolvements in the field of research. Lastly, the *Mdlongwa*[165] judgment provides reasoning that verges on a devolvement in its application of the factors to be considered when assessing the accuracy of a witness' evidence and the weight it ought to be attributed.

6.1 *S v MPUTING* (1960) 2 ALL SA 31 (T)

The case is summarized as follows: four men were prosecuted on three charges of theft, of whom two were found guilty on two of the charges. The appellant, Mr Mputing, was also declared a habitual criminal. Of the appellant's two convictions, only the facts and judgment of the one case are of relevance in this discussion. In this specific case, the complainant was working alone in a café on the evening of 31 January 1959. A thirteen-year-old girl and a woman were standing outside the café, as were five other men. Some of the men entered the café and started assaulting the complainant, and the girl and the woman ran outside to call for help. One of the men opened the till and stole an amount of £94 10s 0d. The complainant launched a counter-attack with some cold drink bottles and all the men fled.

[163] *R v Mputing* (1960) 2 All SA 31 (T).
[164] *S v Mathebula* (1996) 4 All SA 168 (T).
[165] *Mdlongwa v S* (2010) JOL 25668 (SCA).

The crime was investigated and the complainant attended a line-up but was unable to identify the appellant.[166] During the proceedings, however, the complainant identified the appellant positively. The adult female witness, Emily, was not asked to attend the line-up as there was some understanding by the investigating officer that she was familiar with the appellant and even gave the police his name during an interview. Emily denied this but confirmed via dock identification that Mr Mputing was the thief.[167] Maria, the minor girl who also witnessed the incident, confidently identified the appellant during the line-up after she was allowed to walk behind the row of men, and also confirmed her identification in court.[168] The court *a quo* was impressed by the two female witnesses, to such an extent that it was prepared to base its conviction of Mr Mputing solely on their testimony because they testified with confidence and no hesitation.[169] No other direct or circumstantial evidence to this effect was advanced.

On appeal, the writings of Boshoff R show an outstanding knowledge of research relating to the reliability of eyewitness and memory. At the outset of the judgment, Boshoff R sternly warns against the acceptance of eyewitness memory due to the tendency of eyewitnesses to be unreliable.[170] The following position of Dowling R was quoted in the judgment: [171]

> An acquaintance with the history of criminal trials reveals that gross injustices are not infrequently done through honest but mistaken identifications… Questions relating to [the person who a witness claims to recognize]'s height, build, complexion, what clothing he was wearing and so on should be put. A bald statement that the accused is the person who committed the crime is not enough. Such a statement unexplored, untested and uninvestigated, leaves the door wide open for the possibility of mistake.

The majority of the judgment proceeds to summarise the research applied by the court in its final concurring decision to grant the appeal against the conviction. Firstly, the stages of memory are explained - perception, retention, and recall. The reliability of the witness' perception is dependent on an open list of factors, which can be

[166] *R v Mputing* (1960) 2 All SA 31 (T) page 33.
[167] *R v Mputing* (1960) 2 All SA 31 (T) page 33.
[168] *R v Mputing* (1960) 2 All SA 31 (T) page 33.
[169] *R v Mputing* (1960) 2 All SA 31 (T) page 33.
[170] *R v Mputing* (1960) 2 All SA 31 (T) page 33.
[171] *R v Shekelele and Another* 1953 (1) SA 636 (T) at page 638 cited Boshoff R at page 33-34.

summarised as what we know to be the character of the witness, the accused, and environmental factors. Similarly, the witness' memory (or the ability of the witness to retain the memory) is influenced by certain estimator variables including age and familiarity, and the duration of time after the initial observation. A short discussion even follows of the influence of post-event information, suggestive questioning, and the importance of the line-up instructions given to the witness. Finally, the recall and communication of memory are, according to Boshoff R, dependent mainly on the witness' honesty and potential interest in the outcome of the matter.[172]

To a slightly disappointing end, the judgment simply concludes by stating its decision to uphold the court *a quo*'s decision on the first guilty finding in the undiscussed case, and the overturn of its decision on the second conviction. No application of the impressively in-depth research is explained only that "it is desirable to…investigate the nature of the testimony to determine to what extent the witnesses' observations and memory are reliable".[173] Notwithstanding, it is clear that this judgment made by a court in 1960 is based on an in-depth knowledge of the factors influencing the reliability of eyewitnesses one would hope any court in today's time would apply.

6.2 *S v MATHEBULA* (1996) 4 ALL SA 168 (T)

In a case 26 years later, the Court bears the weight of reviewing a decision made to convict Mr Mathebula of contravening section 14(1)(b) of the Sexual Offences Act.[174] The main eyewitness was a ten-year-old girl who fell victim to a man who, on 12 August 1995 around six o'clock at night, touched her between her legs on the outside of her clothing and immediately left her, all while her minor sister was present. The two girls told their father of the incident and described the assailant as a short man with marks on his face. From the description, the father assumed it was their neighbour, and immediately confronted Mr Mathebula in a nearby bar. The girls were not asked to identify him before being approached by their father.

[172] *R v Mputing* (1960) 2 All SA 31 (T) at pages 34-36.

[173] Translated from "...is dit wenslik om … die aard van die getuienis te ondersoek om vas te stel in hoeverre die getuies se waarnemings en herinneringe daarvan betroubaar is" in *R v Mputing* (1960) 2 All SA 31 (T) at page 36.

[174] Section 14(1)(b) of Act 23 of 1957 reads: "(1) Any male person who - (b) commits or attempts to commit with such a girl or boy under the age of sixteen years an immoral or indecent act; shall be guilty of an offence."

During the proceedings in the court *a quo*, an intermediary was utilised by reason of minimising any possible emotional stress the girls may suffer by being in the presence of the accused. The necessity and fairness of the appointment of the intermediary were one of the bases for the review, mainly because the accused was unrepresented and was not able to make any submissions in this regard.[175] The girls were, however, allowed to sit in court after the State had closed its case. The second basis of the appeal was the issue of identification. No mention was made of a formal line-up. The accused was only identified through the description of the assailant the girls gave their father after the incident, who then decided that it was Mr Mathebula based on the vague features they described. It appeared from the victim's testimony that she was unsure of his identity - she did not know his name until she was shown the summons and had never spoken to him before.

The reviewing Court began its analysis of the issue relating to the accused's identification by reiterating the trite law that an eyewitness' identification evidence must be approached with caution.[176] Various factors were considered by the Court, *inter alia* how dark it would have been around 18:00 at night and how briefly the incident lasted. In addition, the victim appeared unsure, through her demeanour and her words, that she was correctly identifying her assailant. The Court took significant issue with this, the probability that the father, who was convinced of the perpetrator's identity, was a strong influence on the girls to point out Mr Mathebula, and with the fact that the children were not given the opportunity to identify the suspect in court. Stafford J proceeds to cite the *Mputing* judgment, specifying again the stages of memory and the factors that influence the reliability of an eyewitness' perception.[177]

It can be deduced from the judgment that the Court had knowledge of these factors, albeit seemingly limited to precedent and application of some common knowledge factors. There is a probability that the review would have had less chance of success had the investigation been conducted in a manner that rendered more reliable identification evidence (for example, by arranging an age-appropriately formatted line-

[175] *S v Mathebula* (1996) 4 All SA 168 (T) at 169.
[176] *S v Mathebula* (1996) 4 All SA 168 (T) at 169.
[177] *S v Mathebula* (1996) 4 All SA 168 (T) at 172.

up) or the appointment of the intermediary been deliberated through a more procedurally sound process. It is not to say that the application of memory science, in this case, is incorrect or problematic - the court *a quo* is perhaps guilty of failing to take into account such research at all - but the application of the research was not what caused the outcome.

6.3 *MDLONGWA v S* (2010) JOL 25668 (SCA)

Meintjes-van der Walt makes a particular effort in analysing the extent to which the Court in *S v Mdlongwa* recognised and applied eyewitness science.[178] It becomes clear in her analysis of the judgment that the Court possessed knowledge of certain factors that are known to influence the reliability of an eyewitness' testimony, but that some of those factors were overvalued or applied incorrectly altogether.

A simplified version of the facts is as follows: Five men robbed a bank in Kwa-Zulu Natal of R50 000.00 on 11 February 2004, of whom two were convicted and sentenced.[179] The one, Mr Mdlongwa, appealed his conviction and sentence firstly on the ground that the security guard (who is the main eyewitness) gave unsatisfactory and contradictory evidence, and that no reliance could be placed on the eyewitness' dock identification, especially taking into account that no identification parade was held. The second reason was based on the expert witness' alleged lack of education and training to be regarded as such, and the third ground that the video footage used in support of the state's case was not original and should not have been admitted into evidence.[180] In this discussion, the focus is placed mainly on the first ground raised for appeal. Notably, no mention of the frailty of eyewitness identification is made at any time during the appeal judgment, but the appeal court expressed that "[t]he sole issue for determination on appeal is whether the appellant was properly identified as one of the robbers".[181]

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[178] Meintjes van der Walt, L. M. (2016). Judicial understanding of the reliability of eyewitness evidence: a tale of two cases, *Potchefstroom Electronic Law Journal*, 19(1), 1–32.

[179] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 2 par 1-3. A case summary is also well set out in Meintjes van der Walt, L. M. (2016). Judicial understanding of the reliability of eyewitness evidence: a tale of two cases, *Potchefstroom Electronic Law Journal*, 19(1), 14.

[180] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 1.

[181] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 3 par 5.

The security guard's testimony is summarised as follows: Three men appeared around the entrance of the bank, of whom he could identify two as those who approached and spoke to him (one being the appellant).[182] One man had a short haircut, the other was wearing a blue Adidas shirt and pants. The man alleged to be the appellant stood next to the guard, drew a firearm, pointed it to the ground, and ordered the guard to allow the men into the bank.[183] The three men and the security guard entered the bank, followed by two more men. Upon their entrance, the person identified by the security guard as the appellant pointed a firearm at the bank clerk, who was then assaulted with a crowbar and ordered to open the door to the teller's section by another robber. A third witness, a female teller, complied and opened the door.[184] The robbers stole the money from the teller's section, took the teller as a hostage, and proceeded to leave the bank but left the teller behind in the cubicle on their way out.[185]

The security guard identified the robber who assaulted the bank clerk as one wearing the blue Adidas clothing, being accused number 5 (the other convicted robber who is not the appellant).[186] The security guard's testimony contradicts this in various ways, however. Firstly, the video footage of the incident clearly showed that the person who was standing next to the security guard at the entrance was wearing blue clothing, whom the expert witness and the security guard previously identified as the appellant.[187] The appeal court was of the view that this contradiction was not material, as the "evidence in respect of clothing worn by the appellant and accused 5 cannot be seen in isolation".[188] There are various issues with this view, which can be summarised as follows:

The first issue is that the only direct evidence of the appellant's identification was the security guard's dock identification, which only took place some 19 months after the incident. No formal identification parade was held at any point in time during the investigation. Of course, such an extensive retention period has been shown time and

[182] *Mdlongwa v S* (2010) JOL 25668 (SCA) pages 3-4 para 5-8.
[183] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 4 par 7.
[184] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 4 par 7.
[185] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 4 par 8.
[186] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 4 par 9.
[187] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 5 par 11.
[188] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 4 par 9.

again to be a cause of decreased accuracy in the evidence of an eyewitness' memory.[189] In the absence of an identification parade, a dock identification alone can under these circumstances not carry sufficient weight to be decisive.[190] It is argued that dock identification tends to increase the chances of misidentification, in part due to context in which the witness is seeing the accused in court, while he is standing in the dock.[191] It is likely to create the automatic impression (albeit subconsciously) of guilty involvement.[192] Dock identification must be regarded as carrying little evidential weight when it is not preceded by independent line-up identification, and it is argued by Schwikkard that dock identification must be treated with caution as its nature is similar to that of a leading question. [193,194] Although it may be relevant and carry weight, various judgments have also expressed reservations regarding the value to be placed on dock identification.[195]

Secondly, the security guard had only two features which he used to identify the robbers who approached him at the entrance: the blue clothing worn by one, and the short hair of the other. The security guard testified that the appellant remained with him for the duration of the robbery, but also gave evidence that the person who assaulted the bank clerk wore blue Adidas-branded clothing. It is clear from the video footage, however, that this was not the case as the footage depicts the person standing next to the security guard at the entrance as wearing blue clothing. In addition, no facial characteristics or other identifying marks were used.[196] In other words, the only features which the eyewitness could use to identify the robbers were

[189] The following are studies which provide more in-depth analysis on the effect of the forgetting curve and the correlation between time delays and retention of memory: Loftus, E. F., Loftus, G. R. (1980). On the Permanence of Stored Information in the Human Brain. *American Psychologist*, 35(5), 409-420, as well as Meintjes-van der Walt, L. (2009). Eyewitness evidence and eyewitness science: whether the twain shall meet. *South African Journal of Criminal Justice*, 22(3), 320, and Louw, D. A., & Venter, A. (2005). System variables and eyewitness testimony. *Acta Criminologica: Southern African Journal of Criminology*, 18(3), 29–42.
[190] *S v Tandwa* 2008 1 SACR 613 (SCA) para 129.
[191] Meintjes van der Walt, L. M. (2016). Judicial understanding of the reliability of eyewitness evidence: a tale of two cases. *Potchefstroom Electronic Law Journal*, 19(1), 22.
[192] Meintjes van der Walt, L. M. (2016). Judicial understanding of the reliability of eyewitness evidence: a tale of two cases. *Potchefstroom Electronic Law Journal*, 19(1), 22.
[193] *S v Tandwa* 2008 1 SACR 613 (SCA) para 129.
[194] Schwikkarrd, P. (2011). The Law of Evidence. *Annual Survey of SA Law*, 2011(1), 862.
[195] See the cases of *S v Moti* 1998 (2) SACR 245 (SCA), *S v Maradu* 1994 (2) SACR 410 (W) and *S v Daba* 1996 (1) SACR 243 (E).
[196] The type of features is also problematic. See *S v Charzen* 2006 2 SACR 143 (SCA) para 14: "facial characteristics are a more reliable and enduring source of identification that variable features such a hairstyle or clothing."

contradicting and confusing. On this basis, Meintjes-Van der Walt argues that the court ought not to have been able to conclude beyond a reasonable doubt that this witness correctly identified the robbers or how the events took place.[197] The contradictions go to the heart of the matter, as Meintjes-Van der Walt stated, and so the court's rationalisation of it as immaterial is quite unfounded.[198]

The third issue was the security guard's estimation that the robbery lasted around ten minutes, while the video footage evidenced that the robbery did not last for more than two minutes and ten seconds. In other words, the length of time the security guard was afforded to view the robbers was significantly shorter than he believed it was. Although the eyewitness' inability to accurately estimate the duration of time the incident lasted does not impede his reliability in and of itself, this does indicate that the witness' perception could not have been as accurate as the time at which he had to observe the robbers was comparably significantly shorter.

Lastly, the security guard testified that he was scared and shocked, and so the court took into consideration that he may have mistaken details such as who was wearing what apparel because there was a gun being pointed at him.[199] On the one hand, the court correctly accounts that the presence of a weapon influences the ability of an eyewitness to correctly perceive the events, likely due to stress and the effects of 'weapon focus'. On the other, the court seems to use the firearm being pointed at the security guard as an acceptable excuse for his contradictory evidence. It is submitted that these positions cannot be held simultaneously; the accuracy of the witness' perception is decreased and should be considered as being less reliable, thereby being relied on with heavier caution.

Had the appeal court perhaps followed its own approach of not regarding the various pieces of identification evidence in isolation, it would not have come to the conclusion to dismiss the conviction appeal. The evidence by the security guard as a whole point to an honest but unreliable witness. Although the court mentioned certain variables

[197] Meintjes van der Walt, L. M. (2016). Judicial understanding of the reliability of eyewitness evidence: a tale of two cases. Per: *Potchefstroom Electronic Law Journal*, 19(1), 19.
[198] Meintjes van der Walt, L. M. (2016). Judicial understanding of the reliability of eyewitness evidence: a tale of two cases. Per: *Potchefstroom Electronic Law Journal*, 19(1), 19.
[199] *Mdlongwa v S* (2010) JOL 25668 (SCA) page 5 par 11.

that influence the reliability of a witness, these factors were applied haphazardly and incorrectly. A deeper and more insightful understanding, as we could see from the earlier *Mputing* and *Mathebula* trial courts, would perhaps have rendered a different outcome.

CHAPTER 7: CONCLUDING REMARKS AND RECOMMENDATIONS

In this psycho-legal analysis, the focus was placed on the unintentional, honest errors by an eyewitness, incurred as a result of the interplay of estimator and system variables that have an impact during the perception, retention, and retrieval stages of memory. It is argued that recognition and knowledge of applied eyewitness research by fact-finders, law enforcement and legal practitioners is necessitated in order to ensure the expeditious and fair disposal of matters while minimising the risk of false convictions brought on by witness misidentifications.

In an effort to understand how the research is best applied in a practical legal setting, the categorisation of estimator and system variables was provided in the chapter two. This discussion was proffered because, although estimator-variable research relates to factors which are outside the court's control, knowledge of the impact these variables may have on memory plays an important part in assessing the accuracy of an eyewitness' evidence. It is accordingly submitted that the court must recognise what factors may have influenced the eyewitness' ability to perceive an event accurately, or that may have impacted their retention of the memory he initially observed. At the same time, although system-variable research is directly controllable by the various role players, such control can only be exercised if the respective role players are aware of the power they possess to ensure that the witness' reliability is not impeded by factors such as undue delays before taking statements, suggestive questioning, improper line-up structures, or the introduction of post-event misinformation during the examination.

The third and fourth chapters delved into the three progressive stages of memory processing: perception, retention and retrieval. The various factors at play during these stages were discussed from a psycho-legal perspective in order to provide an analysis on the extent of the effects of these factors and how their influence can be minimised. It is submitted that knowledge of the influence of the system and estimator variables at play during the respective stages is imperative to ensuring that the memory of an eyewitness is understood by the law enforcement, fact-finders and legal

representatives in order to ensure that the reliability of a particular eyewitness' testimony is not over- or undervalued during court proceedings and adjudication.
The fifth chapter provided an analysis of the manner in and extent to which expert witness evidence is used in courts. The application of the legal principles in Scottish by the Scottish high court in the *Gage* case was set against the legal principles comparable from the South African legal system perspective. It is submitted that, in matters where witness identifications are of critical importance, courts must not be hesitant to admit the evidence of an expert in applied eyewitness research. Not only would an expert witness be in a position to inform the court of which factors are applicable in the given case's circumstances, but also of the extent to which the factors may have impacted the witness' reliability. As long as the expert is cautioned not to provide the court with its inferences of guilt, the admission of such evidence will lead to a better-informed assessment, in so doing reducing the risk of a false conviction.

Finally, chapter six analysed three South African judgments with specific reference to their application of eyewitness research. It is submitted that, although it is evident that the role players in South African Courts are not unaware of such research or the factors that influence the reliability of an eyewitness, there is a undeniable void in the effectiveness of the application and the fullness of the knowledge used when the research is applied during argumentation and adjudication of matters.

It is recommended that, in addition to expert evidence, the pre-trial procedures must be conducted in such a way that the witness' memory is retained and recalled as accurately as possible. For this to be possible, law enforcement must be made aware of how system variables affect may affect the witness. The retention interval must be kept as short as possible to reduce the amount of time before the witness is expected to recall his memory. As immediate identification has been shown to be the most accurate, line-ups must be arranged as soon after the event as possible. Line-up structures must be performed sequentially, and the instructions must be given clearly without indication of which suspect is being considered. Questioning of witnesses must be conducted with care not to introduce any false or suggestive information, such as the testimony of previously interviewed witnesses or evidence that has already been collected. Witnesses must be given the opportunity to freely present their memory of the event, and specific questions need only follow to the extent specific information is

required. During questioning or examination, the investigating officer or legal representative, respectively, must ensure that the witness is asked for details of the circumstances surrounding the event in order to ensure that the estimator variables are properly assessed for their potential impact.

The use of eyewitness evidence will never be eliminated from the justice system, and so the proper understanding and application of applied eyewitness research will always remain pertinent. As memory science evolves, so must the legal system. It is only in this way that the integrity of the court will be maintained, and justice will be consistently and reliably served.

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