

**LINEUP PROCEDURE AND THE SUSPECT'S POSITION AS
DETERMINANTS OF EYEWITNESS IDENTIFICATION
ACCURACY.**

**By
Promise Gumbo**

***A dissertation submitted in partial fulfillment of the requirements
for the Bachelor of Science (Honours) Degree in Psychology.***

**Department of Psychology : University of Zimbabwe
(May 2001)**

Abstract

The present study investigated how the mode of lineup presentation as well as the suspect's position in an identification lineup affected the accuracy of eyewitness identifications. 80 undergraduates were divided into four equal groups and asked to identify a confederate's face from an array of 10 photographs. The photographs were presented either simultaneously or sequentially and with the target photograph in first or last position. While the accuracy of identification did not vary significantly across type of lineup, there was a significant target positioning effect with subjects making less false identifications when the target was presented first rather than last [$\chi^2 (1,80) = 4,851; p < 0.05$]. The results provide preliminary evidence that witnesses tend to employ what, for the purposes of this study, has been called an *immediate identification strategy* (IIS) more than they employ the rival *delayed identification strategy* (DIS) when called upon to identify suspects from sequential lineups.

Table of Contents

Topic	Page
Dedication	i
Acknowledgements	ii
Abstract	iii
List of Tables	vii
List of Figures	vii
List of Appendices	vii
 Chapter One	
Introduction	1
Literature Review	5
a)-Memory and eyewitness evidence	5
-Encoding, storage and retrieval processes	5
-Stage theory of memory	6
-Levels of processing theory	6
-Theories of forgetting	6
-Factors that influence eyewitness memory	9
-Temporal variables	10
-Violence levels	10
-Weapon focus	11
-Face memory	11
-Development of face recognition	12
-Prototypical versus distinctive faces	12
-Other Facial memory findings	13
b)-Procedural issues in eyewitness identifications	14
-Type of lineup	14
-The suspect's position in the lineup	16
-The suspect's position in simultaneous lineups	18
-The suspect's position in sequential lineups	18
-The immediate and delayed identification strategies	20
 c)-Eyewitness Confidence and Identification Accuracy	 21
 d)-Hypotheses	 23

Chapter Two

Method	24
-Pilot study	24
-Subjects	24
-Stimuli / Materials	25
-Apparatus	26
-Design	26
-Procedure	27

Chapter Three

Results	30
-Main Effects	30
-Interactions	31
-Confidence-Accuracy Correlation	33
-Other results	33

Chapter Four

Discussion	34
References	39
Appendices	43

List of Tables

Table 1: Accuracy of identification as a function of lineup procedure	30
Table 2: Accuracy of identification as a function of target's position	31
Table 3: False identifications as a function of combined lineup/position factors	32
Table 4: Relationship between confidence and accuracy	33

List of Figures

Figure 1: Graph of procedure/position interaction	32
--	----

List of Appendices

Appendix A: Advertisement for participants	43
Appendix B: Response Sheet	44
Appendix C: Statistics (SPSS output)	45

Chapter One

Introduction

There is overwhelming research evidence that the standard police identification method, where eyewitnesses are asked to identify the offender from a lineup of people or an array of photographs, is fraught with factors that lead to inaccurate identification of criminal suspects by eyewitnesses. Notwithstanding this fact, law courts generally regard eyewitness evidence as compelling evidence. For example, in the Zimbabwean Supreme Court case of *State versus Mavunga* (1982), then acting Judge of Appeal Dumbutshena, while conceding that the victim had never met the assailant before and that she had only observed him under night conditions, still pronounced "there is no doubt that this evidence is a true description of what happened that night". That many verdicts are significantly influenced by such eyewitness testimony was demonstrated in a mock trial cited by Loftus and Doyle (1992). In that study only 18% of the jurors gave the guilty verdict when the testimony heard did not include eyewitness evidence. In comparison, 72% of other jurors hearing the same facts but with eyewitness testimony added reached the guilty verdict. This reliance by the courts on eyewitness identifications can be partly traced to the legal tradition of classifying eyewitness testimony under *direct* evidence which is ordinarily more persuasive than, say, *circumstantial* or *hearsay* evidence (Buzzard, May, & Howard, 1988).

A practical problem that arises from this elevation of eyewitness identification evidence is the frequent wrongful conviction of innocent persons. Huff (1987) studied 500 wrongful convictions and concluded that 60% of these had been preceded and probably influenced by mistaken eyewitness identifications. Similarly, Connors, Lundgregan, Miller, and McEwan (1996), cited in Merrit (1999), found that 24 out of 28 falsely convicted suspects had been identified as the true culprits by one or more witnesses.

When one appreciates that the injustice of convicting innocent people does not lie merely in the fact that these people are unfairly labeled and punished but also in the fact that the real perpetrators of crime remain unidentified and unpunished the magnitude of the problem becomes even clearer. Furthermore, a wrongfully identified, convicted, and sentenced person is not guaranteed automatic civil redress.

Under Zimbabwean law for instance, for such a plaintiff to be awarded damages, he or she would have to prove that the person who had him or her prosecuted did so solely out of malice and with no reasonable grounds (Felton, 1990). Arguably, most of the eyewitnesses are not actuated by malice and their errors are genuine.

Although some legal jurisdictions do resort to other scientific methods such as DNA testing to corroborate or rebut eyewitness identifications (Wells, Small, Penrod, Malpass, Fulero, & Brimacombe, 1998), these options are not always applicable. DNA tests, for example, can only be carried out in those cases where some form of physical evidence such as blood, sweat, or semen stains are deposited at the crime scene and/or on the victim by the offender. Moreover, the DNA and other interventions may come long after conviction and sentence as happened to the 24 people in the study by Connors et al who were subsequently exonerated but not before they had spent a total of 197 years in prison.

A more proactive solution to the problems associated with mistaken identifications lie in the improvement of the police identification system itself. Bennet (1986) recommends, as a police officer, that "all the various psychological factors that research suggests are necessary" should be incorporated into the identification procedures with the aim of reducing the prevalence of false identifications. Consistent with this and similar calls, several research findings and recommendations have been built into the police identification procedures over the years. However, such research into what can be termed the psychology of police identification lineups has neither been exhaustive nor has it always yielded uniform results. For example, research has tended to neglect the question of how the suspect's position in the lineup affects the accuracy of identification.

Despite this lack of empirical evidence, various recommendations on the construction and conduct of lineups are couched in a language that suggests that positioning does have effect on identification performance. Rule 34 of the British Lord Devlin Report (1976) stipulates that in cases where evidence of eyewitness identifications is given in court, the trial court must be furnished with the exact details outlining "the **order** in which the photos were shown, or the **arrangement** of the photos as they were shown" (Wagenaar, 1988).

One can assume that this measure is meant to provide proof in court about the suspect's exact position in the lineup at the time he or she was identified. In other words, it can be seen as an indirect assertion that the suspect's position is a key determinant of the identification outcome. The present study therefore sought to examine what the effects of positioning, if any, were.

While, as already stated, target positioning effects have not been meaningfully explored, numerous studies have investigated the relative strengths and weaknesses of lineup presentation methods. The most common practice in the conduct of identification lineups is to present to an eyewitness all the lineup members at the same time (simultaneous lineups) or to present one lineup member at a time (sequential lineups). Lindsay and Wells (1985) compared the rate of correct identifications made from simultaneous and sequential lineups and found that there was no significant difference. Similarly, Lindsay, Pozzulo, Craig, Lee and Corber (1997) asked 384 undergraduates to identify a confederate's face from an array of photographs presented either simultaneously or sequentially and found that correct identification rates tended not to differ across lineup procedure.

However, the above findings do not provide a clear picture of how the two lineup procedures influence the rate of false as opposed to correct identifications. There is always a temptation to conclude that since the rates of correct identifications were similar, then the rates of false identifications must have been similar as well. This line of reasoning is likely to lead to false conclusions because it assumes that subjects who do not make a correct identification necessarily make an incorrect one. The truth is that some of the subjects simply abstain from making an identification. For example, in an experiment where 10 subjects attempt an identification from a simultaneous lineup and 10 from a sequential lineup, five subjects from each condition could make correct identifications. However, of the remaining five in the simultaneous condition, four might have made false identifications with one abstention while only one in the sequential condition might have made a false identification with four abstentions.

Lindsay and Wells did show that sequential lineups significantly reduced the rate of false identifications but this was in criminal-absent rather than criminal-present lineups. How the two lineups affect the rate of false (as opposed to correct) identifications and from target-present (as opposed to target-absent) lineups is therefore not clear and was, in addition to the investigation of positional effects, the subject of the present study.

Literature Review

Memory and Eyewitness Evidence

Memory is one of the most important factors governing the accuracy of eyewitness identifications. The basic demand placed on eyewitnesses by the criminal justice system is that the witness should remember, recall, recognise, and /or identify events objects or people. All these are demands on the witness's memory. But as Meritt (1999) states, "Memory does not function like a video recorder." Several factors determine whether the memory package that the witness brings to a police station or to the court room will be accurate or not. Among these factors is the effectiveness of the processes of encoding, storage, and retrieval. Also important are various witness and situational variables.

Encoding, storage, and retrieval processes.

As early as 1885, Herman Ebbinghaus postulated that three essential processes involved in memory were those of encoding, storage, and retrieval (Hayes,1998).The encoding process is the acquisition and perception stage and involves receiving information through the senses and then representing it in some form in the mind. The storage or retention stage involves the transfer of the encoded information into a more or less permanent memory storehouse. The retrieval process (which is what an eyewitness is specifically required to engage in by the criminal justice system) involves recalling or bringing out the contents of the memory storehouse.

Stage Theory of Memory.

Atkinson and Shiffrin (1968), cited in Lahey (1998), postulated the stage theory of memory which assumes that people have a three-stage memory that serves the human need to store information for different lengths of time. The first stage is called the *sensory register* and is designed to hold an exact image as gathered by the senses until it is fully processed. The sensory register holds information for very brief periods of time (e.g. Lahey predicts a quarter of a second for visual information) before it fades away.

The second stage in the Atkinson and Shiffrin model is *short-term memory (STM)* into which information that is selected from the sensory register for further processing is transferred. Transfer to the STM is automatic so long as the individual attends adequately to the stimulus. As Lahey points out, Miller (1956) has shown that the capacity of STM is 7 ± 2 bits of information. The third stage of the model is *long-term memory (LTM)* which is the storehouse for information that must be kept for long periods of time. Typically, information is transferred from STM to LTM through rehearsal (mental repetition of information). For example, a person who wants to memorise a new credit card pin number can repeat it silently or loudly until he or she can recall it freely. Going by this model, an eyewitness whose first two memory stages are defective would not be able to transfer sensory information to LTM and would consequently be unable to recall the relevant information.

Levels of Processing Theory

A number of study observations led to some psychologists questioning the Atkinson and Shiffrin model. Hayes (1998) reports the finding by Shallice and Warrington (1970) that studied a man whose STM digit span deteriorated to only two following a motorcycle accident and yet retained normal long-term memory. This finding suggested that LTM was not dependent on information transfer from STM. Hayes notes that as a result of similar criticisms, Craik and Lockhart (1972) postulated that there was in fact only one memory store beyond the sensory register and that apparent differences in memory stores were a by-product of how deeply the information was processed to start with. As Lahey (1998) reiterates, the Craik and Lockhart model stipulates that "there is a continuum of levels of processing ranging from very shallow to very deep". As such, information will be kept only briefly if it processed at a shallow level, but will be kept much longer if it is processed at a deeper level.

Theories of forgetting.

Eyewitnesses quite often just cannot remember events or cannot recall them accurately. As Hayes (1998) notes, the past hundred years of research has brought about a number of psychological explanations for this failure to remember. The *decay theory* states that forgetting is a result of unused memories fading with the passage of time. Wagenaar and Groeneweg (1990) (cited in Gruneberg and Morris, 1992) found support for this theory when in a comparison of testimonies and documentary evidence from concentration camp victims, they discovered that many details had been forgotten over the 40year post-event period. Even though some psychologists (e.g. Hayes, 1998) have postulated that the memory trace does not actually decay but simply lies dormant, the fact remains that bringing back memories from a long time ago is a problem for people in general.

The *interference theory* states that forgetting is a result of other memories interfering with what one is trying to remember. Such interference can be proactive as in a case where a person's memory of an event in question is distorted by memory of a similar but earlier event. On the other hand, in retroactive interference, forgetting is caused by memory of a later event distorting memory of the event in question. Research evidence for the operation of interference was provided by Wickens, Born, and Allen (1963), in Lahey (1998). The researchers made subjects memorise three-digit combinations and found that recall of earlier memorised digits became worse as the subjects were shown more and more subsequent lists.

A third major theory emphasises the fact that memory is an active process. This theory has been called the *reconstruction theory* because it suggests that memories change over time in a way that renders them less complex, more consistent, and more congruent with what one already knows or believes (Lahey, 1998). Studies have shown that reconstructed memories are usually not accurate. For instance Lahey cites a study by Bransford and Solomon (1973) who asked subjects to repeat an account they had heard. The subjects, who had been told that a secret document had been "thrown into the fireplace", stated that the document had actually been "burned". This filling in of gaps is characteristic of memory reconstruction. In court, for example, a witness who merely saw a suspected thief run out of a house from which property was later found missing, could claim that he or she actually saw the suspect steal the property.

Motivated forgetting was proposed by Sigmund Freud as another explanation for why people fail to remember things or events. According to this theory, people push unpleasant information into the unconscious from where it cannot be retrieved through ordinary everyday techniques such as police interviews or court cross-examinations. However, like most psychoanalytic concepts, the theory of motivated forgetting has not been backed by much empirical evidence. Some form of support for the theory was however found by Bower (1981) (in Hayes, 1998). Bower asked his subjects to note in a diary their experiences of emotionally pleasant and unpleasant events. After a week, the subjects tended to remember the pleasant events more than they did the unpleasant ones although their current mood also appeared to determine which type of events they recalled more. If motivated forgetting did occur, that would be a blow to justice. For example, a rape victim would repress all memories of the nasty event into the unconscious and would be unable to testify against the rapist in court.

Factors that influence eyewitness memory

Several factors influence eyewitness memory and can be categorised into those that are inherent in the witness (witness variables) and those that are inherent in the event (situational variables). A few situational variables that affect eyewitness memory are outlined below.

i)-Temporal variables

Common sense would dictate that the longer a witness views an event or person the better the chances of an accurate recall later. Several studies have in fact confirmed this prediction. As Bartol and Bartol (1994) point out, it has also been shown that the more times a person views an event or person, the more accurate the memory. Another common sensical and true conclusion is that fast moving events are more difficult to register and hence recall than slow moving ones. A problem related to temporal factors that often arises is that witnesses tend to over-estimate the duration of an event. This consequently gives the impression that they had sufficient time to fully encode their observations and that their recall must therefore be accurate. In a study by Loftus, Schooler, Boone, and Kline (1987), the majority of subjects who were shown a 30 seconds long video of a simulated robbery over-estimated the duration by more than 2 minutes.

ii)-Violence Levels

Different crimes are associated with different levels of violence and witness arousal. While the level of violence in a fraud case is almost always zero, an armed robbery is by definition a violent crime which invariably leads to high levels of physiological arousal. Recall and recognition abilities are known to be negatively affected by high arousal (Clifford and Scott, 1978). Clifford and Hollin (1981) noted that subjects viewing a film of a violent episode were less accurate in their answers to questions about the film than subjects who watched a non-violent film.

iii)-Weapon Focus

It has been shown that in crimes involving the use weapons, witnesses attend to the weapon more than they attend to the offender's features. This phenomenon is called weapon focus and obviously affects the ability of a witness to later identify the culprit. Maass and Kohnken (1989), in Gruneberg and Morris (1992) examined the operation of weapon focus by approaching half the subjects in an experiment while holding a syringe and the other half while holding a pen. Subjects who were approached by an experimenter holding a syringe had more difficulties identifying him later. Bartol and Bartol (1994) explain weapon focus in terms of the *cue-utilisation theory* which states that under high arousal people tend to narrow their attention to the cues that are most threatening or relevant and correspondingly reduce their attention to other cues in the immediate environment.

Face Memory

Although a witness at a police identification parade can rely on many cues and clues such as clothing, voice, and gait to identify the criminal, a lot depends on the witness's ability to recognise the suspect's face. In fact, the whole identification system is premised on the assumption that the witness will focus on the faces of the lineup members. As Laughery and Wogalter (1989) put it, "the key element of all these procedures is that a witness is attempting to find a match between the information he or she has in memory about a face and external faces (photo or live) with which the memory is being compared" Steps are actually taken to ensure that witnesses engage in face discriminations as much as possible. For instance, where possible, lineup members are attired similarly so that the witness makes a judgement based on a comparison of faces rather than clothing.

Research on factors governing face recognition has been extensive and informative. A sample of the findings from this area of research follows.

i)-Development of face recognition

Chung and Thomson (1995), in a review of studies on face memory conclude that recognition of faces has a developmental component where accuracy improves with age from about 5 years onwards. There is however an "*adolescence dip*" when there is a temporary decline in face recognition performance. As Chung and Thomson point out, one of the basic explanations for the development of face recognition is neuropsychological and focuses on the maturational changes in the right hemisphere of the brain which is important in face recognition tasks. Another explanation emphasises the cognitive and information processing element. The *face schema theory* by Goldstein and Chance (1980) in Chung and Thomson (1995) proposes that as children grow older, they are exposed to faces as a class of stimuli as opposed to just specific faces. Hence, the age-related improvement in face recognition is a function of the increase in schematic knowledge of faces as a class rather than as unrelated and independent stimuli. The important point in the context of this study is that everything else being equal, subjects of a given age bracket are expected to perform equally well in identification tasks. Any variations would therefore point mostly at situational and procedural factors.

ii)-Prototypical versus distinctive faces

Valentine (cited in Gruneberg and Morris, 1992) postulates that there is a general mental exemplar of a typical human face around which average faces seen are clustered. Distinctive or non-typical faces on the other hand are stored more uniquely. Consequently, it is more difficult to discriminate a typical face than a non-typical one. This was confirmed in a study by Chiroro and Valentine (1995) who found that the average proportion of hits for distinctive faces among 68 subjects was 0.76 while that for typical faces was lower at 0.69.

The majority of suspects are likely to have typical faces. Therefore, to improve the extent to which findings from studies on lineup identifications can be generalised, people with typical rather than distinctive faces should be used. However in real life not all criminals will have typical faces.

To cater for this inescapable fact, Wells, Leippe and Ostrom (1979) propose a more practical solution based on the concept of *lineup functional size*. A lineup's functional size refers to the number of foils in the lineup that resemble the suspect. It is recommended that this size be sufficiently high. In the final analysis therefore, whether or not the foils used in a lineup have typical or non-typical faces should depend on whether the suspect has a typical or non-typical face and not on some other predetermined hard and fast rule.

Other facial memory findings

The following studies cited by Laughery and Wogalter (1989) revealed other pertinent findings concerning face recognition in forensic settings. Laughery, Alexander and Lane (1971) found that identification accuracy decreased as the number of similar intervening faces increased. Bruce (1982) found that differences in facial expression at the time of encoding and identification decreased recognition accuracy. In the study, the confederate changed his pose from a smiling one when first seen to an unsmiling one at the identification stage. Finally, Malpass and Devine (1981b) showed that better face recognition was facilitated by presenting the faces under conditions similar to those the face was first encountered.

Procedural Issues in Eyewitness Identifications

The preceding issues concerning situational, witness, and offender characteristics can be classified under *estimator variables* that help estimate how accurate a witness can be in a given situation. As Wells (1978) points out, these variables cannot be directly controlled by the criminal justice system and have to be taken as they are. By comparison, the methodological issues to be discussed below fall under *system variables* that can be controlled by the criminal justice system. It is these procedural variables such as lineup procedures that the present study specifically explored.

Type of lineup

Explaining the differences in identification performance across lineup procedures, Wells (1984) postulated that witnesses use different decision making strategies in simultaneous and sequential lineups. A *relative judgement* process tends to be used by witnesses who are required to identify a suspect from simultaneous lineups. It involves eyewitnesses picking from the lineup the person who, in the opinion of the witness, looks most like the criminal relative to other lineup members. A witness making a relative judgement typically reasons along the following lines. "I know it cannot be 1,2,3,5 or 6. So it must be 4."

Studies have provided evidence for the operation of the relative judgement process. Using the *removal- without- replacement* technique, Wells (1993) concluded that most of the 54% of the witnesses who identified the culprit in a criminal-present lineup would simply have identified someone else if the suspect has not been present. In the experiment, 200 witnesses to a staged crime were shown either a suspect-present lineup or one from which the suspect had been removed without replacement. Wells, Small, Penrod, Malpass, Fulero, and Brimacombe (1998) point out that even the usual instruction to witnesses that the suspect might or might not be in the lineup does not significantly reduce relative judgements.

As opposed to relative judgements, Wells contends that witnesses exposed to sequential lineups tend to engage in *absolute judgements*. In this case, an eyewitness compares each lineup member to his or her memory of the offender. Since the lineup members come one a time, relative comparisons are not easy to make. In any case, the witness is never sure if the next person will not resemble the criminal even more.

How then are these two judgement processes likely to influence the rate of false identifications from suspect-present simultaneous and sequential lineups? One prediction is that since in a target-present simultaneous lineup the culprit is likely to fit the witness's memory more than any of the distracters, the rate of false identifications is likely to be low. This cannot be said with as much certainty for the absolute judgement-dependent sequential lineups.

Conversely though, the degree of similarity between lineup members can be quite high that even a witness using relative judgement can have difficulties discriminating between the faces. In signal detection terms, the higher the degree of similarity between stimuli an observer is required to discriminate, the harder the task. Once again this cannot be said of sequential lineups which do not "confuse" the witness with an array of simultaneously presented similar looking alternatives. In the final analysis then, the errors associated with use of one judgement process may balance out the errors associated with use of the other. The final outcome would consequently be comparable identification accuracy rates.

The Suspect's Position in the Lineup

The US Department of Justice Technical Working Group on Eyewitness Evidence (1999) recommends that the suspect be placed in different positions in subsequent lineups or after each identification. It is further recommended that where only one lineup is to be presented to a single witness, then the suspect must be positioned randomly unless he or she requests a particular position.

Since the rationale for these recommendations regarding the position of the suspect in the lineup is not specifically stated, a logical deduction would be that they are meant to counter possible tip-offs among witnesses about where on the lineup the suspect is positioned. But if that were the reason for the rule, it would amount to an unnecessary duplication of safeguards since collusion among witnesses is also prevented by the practice of ensuring that witnesses who have made an identification do not mix with those who are still to do so.

Perhaps the most direct inference that the target's lineup position influences identification performance was made by Wells and Luus (1990) when drawing an analogy between identification lineups and scientific experiments. They claim that changing the suspect's position between lineup presentations is analogous to the experimental practice of randomising the order in which different stimulus levels are presented. Since in experiments this procedure is used to counterbalance some practice or carry-over effects, by inference, Wells and Luus are suggesting that there are similar carry-over effects associated with target positioning, which effects are likely to affect the accuracy of the resultant identification.

One point that this analogy seems to miss though is that carry-over effects are a problem in designs where the same set of subjects are exposed to subsequent experimental conditions (within-subject designs) as opposed to designs where different subjects are exposed to different experimental conditions (between-subjects designs). Police lineups resemble between-subject experimental designs in that a witness makes an identification of the same suspect only once. The concern by Wells and Luus about carry-over effects would therefore be unjustified in such cases. It would be well-placed though in those cases where a witness is made to select the suspect's face from an array of photographs before being shown a live lineup made up of the same people.

Without belabouring the point, if the concern with positioning of the suspect in the lineup is suggestive of positional effects on identification performance, a question that arises is whether there would be better accuracy when the suspect is positioned towards the beginning, the centre or the end of the lineup. Furthermore, it prompts an enquiry into whether the positional effects would be similar where lineup members are presented to the witness all at the same time (simultaneous lineups) and where one lineup member is presented at a time (sequential lineups).

The suspect's position in simultaneous lineups

One quick prediction is that the suspect's position has no effect on identification accuracy in simultaneous lineups. First, the lineup's *nominal* and *functional* sizes as postulated by Wells, Leippe, and Ostrom (1979) remain the same regardless of the suspect's exact position in the lineup. In other words, the number of distracters that are similar to the suspect in appearance (functional size) and the total number of distracters (nominal size) remains constant. That being the case, the witness is able to use the same *relative judgement* process in deciding who in the lineup is the suspect. Regardless of his or her position in the lineup, the suspect will always remain the person who best fits the witness's memory of the culprit. Therefore whether the witness is able to correctly identify the criminal from a target-present simultaneous lineup is likely to depend on the effectiveness of the relative judgement process and other factors related to memory rather than the suspect's position in the lineup.

The suspect's position in sequential lineups.

A prediction about how the suspect's position is likely to affect the accuracy of identification from sequential lineups cannot be made as readily as it can for simultaneous lineups. This is because while in simultaneous lineups the key factor governing accuracy is the relative judgement process, in sequential lineups the outcome depends on an inter-play of many more decision making strategies. To start with, a witness who is required to make an identification from a sequential lineup uses an absolute judgement approach where he or she compares each lineup member to his or her memory of the suspect (Wells, 1984). This means that unlike in simultaneous lineups, the witness is unable to engage in inter-person comparisons but has to compare the suspect to the image in his or her memory. This reliance on "raw" memory makes the identification task harder given the fact that memory per se is a highly dynamic phenomenon that is susceptible to many distortions.

As if reliance on the absolute judgement strategy was not sufficiently problematic, a witness in a sequential lineup has to make a series of other decisions before finally making an identification. It is postulated in this study that over and above the effectiveness of the absolute judgement process, the accuracy of identification in sequential lineups depends on two other decision- making strategies.

The Immediate and Delayed Identification Strategies

The first of the two strategies that is envisaged to be common among witnesses when they are required to make identifications from sequential lineups is hereinafter called the *immediate identification strategy* (IIS). A witness who employs the IIS tends to pick out the very first lineup member who has some measure of resemblance to the suspect in appearance. It is suggested that a witness will adopt the IIS because he or she is afraid that delaying the making of a positive identification would allow the criminal to pass unidentified. As such, whichever lineup member is presented first and has some reasonable likeness to the witness's memory of the suspect is identified as the suspect.

The second strategy that witnesses can adopt works in a way opposite to the one described above and can be called the *delayed identification strategy* (DIS). In this case, instead of making an identification at the earliest possible moment, the witness allows early-presented lineup members to pass unidentified with the hope that a lineup member with a closer likeness to the suspect (and therefore probably the suspect himself) will come further down the line.

Supposing that the immediate and delayed identification strategies are indeed used by witnesses as suggested, a central question is how target positioning then interacts with these strategies to affect the accuracy of identification. A logical deduction would be that witnesses who employ the IIS are more likely to make correct identifications when the suspect is positioned towards the beginning of the lineup and false identifications when the suspect is positioned towards the end of the lineup. Conversely, DIS witnesses are likely to make correct identifications when the suspect is presented late and false identifications when the suspect is presented early.

It is postulated that several factors, including individual differences, determine the choice of one identification strategy rather than another by a witness. For example, one practice in the conduct of police identification parades that clearly encourages witnesses to engage in immediate rather than delayed identification is the standard pre-identification instruction to sequential lineup witnesses that they should identify the suspect as soon as they recognise him or her since lineup members would be shown only once. Going by this procedural fact therefore, it can be said that most witnesses in police identification parades use the IIS. The overall picture then is that in sequential lineups the rate of correct identifications is likely to be higher when the suspect is presented early rather than late in the lineup.

Eyewitness Confidence and Identification Accuracy

Psycho-legal researchers have extensively examined the relationship between the confidence with which an eyewitness makes an identification and the accuracy of that identification. This interest in the confidence-accuracy relationship is stimulated largely by the courts' inclination towards believing evidence given by confident witnesses. In *Neil versus Biggers* (1972) the US Supreme Court ruled that eyewitness confidence was a valid criterion upon which to judge the trustworthiness of eyewitness testimony and this is the general view held by judges worldwide (Bartol & Bartol, 1994). Apparently this view is not confined to the bench only. For instance Brigham and Wolfskel (1983) in Wells et al (1998) found that 75% of prosecutors and 40% of defence attorneys believed that witnesses who are more confident are more likely to be accurate.

In a study to test the wisdom of this legal standpoint, Wells, Lindsay, and Ferguson (1979) asked eyewitnesses to identify a thief from a six-picture array and found no correlation between witness confidence and identification accuracy. In fact Wells et al (1998) note that most studies have reported correlations close to zero. In a meta-analysis of 35 studies however, Bothwell, Deffenbacher, and Brigham (1987) concluded that highly confident witnesses did tend to be more accurate than less confident ones ($r=0.25$). Similarly, Lindsay, Wells and Rumpel (1981) found a positive relationship, although weak ($r=0.26$), between witness confidence and identification accuracy.

Despite this contradiction in research findings, the common view held by many psychologists is that there is no meaningful relationship between confidence and accuracy. Leippe (1980) asserts that accuracy of recognition has little to do with witness confidence because people are usually unaware of the inaccurate mental operations that influence their decisions. Examples of such automatic or unconscious mental operations include stereotypical perceptions of what a criminal looks like (Shoemaker, South, & Lowe, 1973) and unconscious transference where a person seen in one situation is recalled as another person seen in another situation (Loftus, 1979).

Basically, eyewitnesses need not be driven by malice or ill-will to make wrong conclusions regarding a person's identity. The unfortunate thing is that even a well-meaning witness may still have false reconstructed memories that are stored as highly believable "facts" such that the witness can still vigorously declare absolute certainty even when the identification is totally inaccurate.

Another worrying thing about the criminal justice system's bias in favour of confident witnesses is that prosecutors are often hesitant to proceed with cases based on the testimony of less confident witnesses who however could still be credible and useful witnesses. Over reliance by the courts on the confidence factor would also mean that other critical factors are not duly taken into account. For instance, a court may fail to appreciate that the impressive confidence levels shown by a witness are actually stemming from the fact that the identification lineup was not properly constituted with good foils. The suspect's confidence could also have been boosted by biased pre-identification instructions which suggested that the suspect was definitely in the lineup.

In general, Wells et al (1998) point out that the criminal justice system must be aware that the confidence-accuracy relationship depends on a variety of cognitive and social factors. These include timing of the confidence judgement, the eyewitness's level of awareness, the optimality of information processing at encoding, the distinctiveness of the to be identified person, and the match between the target's appearance at encoding and at retrieval.

Hypotheses

In light of the foregoing, the present study set out to investigate the effects of lineup procedure (simultaneous versus sequential) and the position of the target (first versus last) on eyewitness identification accuracy. Specific predictions were made. Firstly, that the accuracy of identification from simultaneous lineups would not differ significantly from sequential lineups. Secondly, that the target's position in a simultaneous lineup would have no effect on identification accuracy while in sequential lineups, the proportion of false identifications would be lower when the target was presented first rather than last. Combined, the first two predictions were to the effect that positioning and procedure per se would have no effect on accuracy but that there would be a significant positioning/procedure interaction. The third prediction was that there would be no positive correlation between eyewitness confidence and the accuracy of the identification made.

Chapter Two

Method

Pilot Study

A pilot study was conducted to test the feasibility of the adopted methodology and make the necessary adjustments. 5 subjects were allocated to each of the four experimental conditions. It was observed that the strategy of having the "culprit" (confederate) enter the room briefly (30seconds) and leave without any kind of interaction with the "witnesses" (subjects), might not have been adequate for the subjects to notice and observe the to-be identified confederate. It was decided to increase exposure time to about a minute and to have the confederate address the participants. It was also decided to examine positional effects by presenting the target photograph first and last rather than second and ninth as initially planned. The idea was to widen the positional gap so as to get a clearer contrast. Subjects in the pilot study were highly confident that they had correctly identified the confederate. When specifically asked why they were confident, it emerged that the degree of similarity between the confederate's photograph and that of the foils was probably not high enough. Because of this observation, efforts were made to improve the lineup's functional size by replacing bad foils with those of a closer likeness to the confederate.

Subjects

A total of 80 undergraduates (40 females and 40 males) from the University of Zimbabwe took part in the study. They were divided into four groups of 20 each (10 females and 10 males) and tested in four different experimental conditions. The first group had a mean age of 22,25years (sd 1.86) and was tested in the simultaneous presentation condition with the target in first position, the second group (mean age 21.90years, sd 1.33) was tested in the simultaneous presentation condition with the target in last (tenth) position the third group (mean age 21.40years, sd 1.14) was tested in the sequential presentation condition with the target in first position and the fourth group (mean age 21.50years, sd 1.05) was tested in the sequential presentation condition with the target in last position.

The subjects took part in the study on a voluntary basis in response to an advertisement for willing participants (see Appendix A). Each subject was paid a fee of \$50 at the end of the session. All subjects were of normal or corrected to normal vision. The confederate in the study was a male aged 21years from a suburb in Harare and had not met any of the subjects before.

Stimuli/Materials

The materials used in the study consisted of a 5x4cm colour photograph of the confederate's face (to shoulder level) in an unsmiling pose. There were nine other photographs of similar dimensions, same colour, and pose, showing faces of male strangers of approximately the same age and similar facial features as the confederate. All the photographs showed the faces in a full frontal view, clean shaven and without headgear, spectacles or ornaments.

Apparatus

For the simultaneous presentations, the ten photographs were stapled onto a long strip of board paper in a single row such that all could be viewed at the same time. For sequential presentations, one photograph was placed on a separate page of a photo album such that only one could be seen at a time as the pages were flipped over. The 10 photographs were numbered at the bottom.

Design.

A 2x2 independent groups factorial design was used in the experiment. 20 subjects (10 females and 10 males) were randomly assigned to each experimental condition from the initial sample of 80 participants. The first experimental condition was the simultaneous presentation of the photographs with the target photograph in first position. The second condition was the simultaneous presentation of the photographs with the target photograph in last position. The third condition was the sequential presentation of the photographs with the target in first position and the fourth condition was the sequential presentation of the photographs with the target in last position. There were two independent variables in the study. The first was the mode of presentation of the photographs to the subjects and this was either all at the same time (simultaneously) or one at a time (sequentially).

The second independent variable was the position of the target photograph in the lineup and this was either first or last. The dependent variable was the accuracy of identification measured in terms of the proportion of incorrect identifications made in each condition.

Procedure

Four days before the experiment an advertisement for willing participants (see Appendix A) was placed on the notice board. Students who responded were told to report for the experiment on the appointed date, time, and venue but no disclosures regarding the exact nature of the experiment were made. On the day of the experiment, the 80 subjects were asked to take seats in a classroom in which there was the experimenter and an assistant. The experimenter addressed them as follows:

***Good morning ladies and gentlemen. Thank you for availing
yourself for the exercise which will commence shortly.***

At that point the confederate, who was carrying a small cardboard box, entered the room and was introduced to the subjects by the experimenter as Harold, another colleague in the study. Harold then said the following to the subjects.

***Good morning ladies and gentlemen. To commence our exercise,
I am going to ask each of you to pick a number from the box here.
Please keep the number allocated to you as we are going to call you
one at a time using the numbers later.***

The confederate then made each participant pick a card with a number inscribed on it from the box. Apart from facilitating exposure of the to-be-identified confederate to the subjects, the number allocation was also meant to assist in the random assignment of subjects to the four experimental conditions later. After finishing off the allocation of numbers to the subjects, which took about two minutes, the confederate left the room and the vicinity altogether. The experimenter then said the following.

***Please remain seated and avoid discussing anything
amongst yourselves. I will now go into the next room and
Wilson (the assistant) will ask one of you at a time to join me
for the remainder of the exercise.***

The experimenter then left and entered the next room leaving behind the assistant. The assistant then started calling out, in random order, the numbers 1 to 80 and the subject allocated the number called was asked to join the experimenter in the next room. To each subject, the experimenter then made the following announcement:

I would like you to try and identify the face of Harold, the gentleman who allocated you a number a while ago, from a set of photographs that I am going to show you. Please note that Harold's photograph may or may not be among the photographs. If you are able to identify his photograph, write down the number displayed below it in the relevant section of the response sheet provided. If you are unable to identify Harold's face from the set of photos, indicate as such on the relevant section of the same response sheet. Thereafter, complete all other relevant sections of the response sheet.

The experimenter then showed the first 20 subjects all the ten photographs at once with the target photo in position one on the lineup. The second lot of 20 subjects were given the same briefing and were shown all the ten photos at once but with the target photo positioned last in the row. For sequential lineups, the same set of instructions were repeated but subjects were also told that each photograph would be shown once only and that if the subject recognised Harold's face, he or she should point this out at once. The photographs were then presented one at a time with the target photo being presented first or last.

After each identification or non-identification, participants were made to complete a response sheet (see Appendix B). The response sheet, in addition to detailing the nature of the identification made, also required subjects to rate their confidence that they had made the correct identification. Also, at the end of each identification or non-identification, participants were individually debriefed as follows:

***Thank you for taking part in the experiment.
The purpose of the study is to explore some
of the factors that influence the identification of criminal
suspects from police lineups. Your performance in the
experiment will not be disclosed to anyone.***

Participants who wanted to know how they had performed were given an honest feedback on the accuracy of their identification. To prevent discussions or tip-offs between subjects who had gone through the identification process and those who had not yet done so, subjects leaving the experimental room were not allowed to return to the waiting room.

Chapter Three

Results

Main Effects

Since data was measured on a nominal scale and did not meet all the requirements for use of a parametric test such as factorial anova, chi-square calculations were carried out to examine the main effects of type of lineup and the main effects of target position.

a)-Type of lineup

Identification performance across lineup procedure is summarised in Table 1 below. A graphical presentation of the same data can be seen in Appendix C.

Table 1:- Accuracy of identification as a function of lineup procedure.

Accuracy of Identification				
	N	Correct	Incorrect	Abstentions
Simultaneous	40	32(.80)	8(.20)	0(0)
Sequential	40	30(.75)	9(.23)	1(.02)

Note: Figures in parenthesis represent cell proportions.

Although the proportion of false identifications from sequential lineups was higher (0.23) than the rate from simultaneous lineups (0.20), the difference, as predicted, was not significant [$\chi^2(1,80) = 0.539$; $p > 0.05$]

b)-Position of target

Identification performance from the different positions of the target in the lineup is summarised in Table 2. (Also see graph in Appendix C).

Table 2:- Accuracy of identification as a function of the target's lineup position.

Accuracy of identification				
	N	Correct	Incorrect	Abstentions
First position	40	35(.88)	5(.12)	0(0)
Last position	40	27(.68)	12(.30)	1(.02)

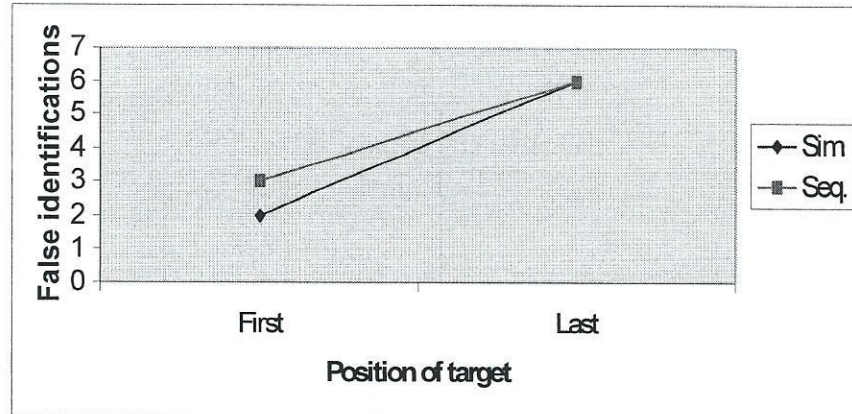
Note: Figures in parenthesis represent cell proportions.

The position of the target in the lineup significantly influenced the proportion of false identifications by subjects. There were more false identifications when the target was positioned last (0.30) than when it was positioned first (0.12). [$\chi^2(1,80) = 4,851; p < 0.05$] These results contradicted the pre-test prediction that the main effects of the target positioning would be insignificant.

Interactions

Chi-square calculations were made to determine whether the variable of target position interacted with the variable of lineup type to influence identification accuracy. Figure 1 shows a graph suggesting a lineup procedure/target position interaction which however was not statistically significant [$\chi^2(1,80) = 2,695; p > 0.05$].

Figure 1: Graph of procedure/position interactions showing number of false identifications.



The absence of a significant procedure/position interaction is further illustrated in Table 3. As can be seen from the table, the proportion of incorrect identifications from the simultaneous/target-first condition (0.10) was not too different from the sequential/target-first condition (0.15). Similarly, the proportion of false identifications from the simultaneous/target-last condition (0.30) and the sequential/target-last condition (0.32) were virtually the same. It had been predicted that a significant interaction would be found with positioning having no effect in simultaneous lineups but a strong effect in sequential lineups.

Table 3: Proportion of false identifications as a function of combined type of lineup and position of target factors.

	Simultaneous Lineup	Sequential Lineup
First Position	2(0.10)	3(0.15)
Last Position	6(0.30)	6(0.32)

Confidence-Accuracy correlation

Since accuracy of identification was expressed as a dichotomous variable and confidence as a continuous variable, the test used to compute the association between eyewitness confidence and identification accuracy was the *point biserial correlation* (Minium,1978). As predicted, there was no significant positive correlation between eyewitness confidence and identification accuracy ($\phi = 0.09$). 15% of the subjects who made incorrect identifications were highly confident that they had made the correct choice while 18% of the subjects who made correct identifications were not confident that their selections were accurate. Altogether there was no confidence-accuracy match in 33% of the subjects. Table 4 shows the figures relating to the confidence-accuracy relationship.

Table 4: Relationship between eyewitness confidence and identification accuracy.

	Accuracy of identification			
	N	Correct	Incorrect	Abstentions
High confidence	80	48(.60)	12(.15)	1(.01)
Low confidence	80	14(.18)	5(.06)	0(0)

Other results

The overall accuracy rate (measured in terms of correct identifications) was 78% and this was consistent with the 70-85% accuracy rate reported by Bartol and Bartol(1994) to be common in most eyewitness identification studies. However, only one subject abstained from making a positive identification and this figure was unexpectedly low.

Chapter Four

Discussion

The main aim of the study was to investigate how different lineup procedures and the target's position in the lineup affected eyewitness identification performance. The prediction that the accuracy of identification would remain comparable across type of lineup was confirmed by the results. This could be confirmation of an earlier prediction that although different decision making strategies are used in simultaneous and sequential lineups, these strategies are equally prone to errors of judgement. In other words, while the absolute judgement strategy may be more susceptible to memory distortions, the relative judgement strategy may be equally affected by other factors. For example, when the lineup's functional size is sufficiently high, the witness has the task of using the relative judgement process to choose between several possible alternatives which, in signal detection terms is not an easy task. In the final analysis therefore, there may have been a counterbalancing of the errors associated with each strategy with the final outcome becoming an almost equal accuracy or inaccuracy rate.

Contrary to a pre-test prediction, the main effects of target positioning were significant with the rate of false identifications being higher when the target was positioned last in both lineup types. This result was not expected for simultaneous lineups. For sequential lineups however, the prediction that subjects would employ the immediate identification strategy and consequently make more false identifications when the target was positioned last was confirmed. Why similar results came out in the target-last simultaneous lineup, is open to speculation. It could be that in the present experiment the photographs were stapled too far apart to allow a proper relative judgement. Thus, although the photos were presented all at the same time, the subjects may have actually viewed the photos one at a time as they did in the sequential lineup.

These findings regarding the main effects of lineup procedure and target positioning have a number of practical implications on those involved in the administration of criminal justice. One inference is that since the accuracy rates are not significantly

different, then the police can choose a lineup procedure that is convenient in the circumstances.

However the final decision regarding which method to use would have to be made with due regard to overall scientific evidence about simultaneous and sequential lineups. A consistent finding has been that sequential lineups significantly reduce the rate of false identifications in suspect-absent lineups (Lindsay, Pozzulo, Craig, Lee, & Corber, 1997). As such it would be advisable to use sequential rather than simultaneous lineups. Merrit (1998) makes a similar recommendation when she writes "Ideally the photographs should be shown to the witnesses sequentially as opposed to in a photo array."

The finding suggesting that witnesses tend to be more accurate when the suspect is presented first rather than last has rather interesting practical implications. It means there would be an unavoidable conflict of interest between the prosecution and the defence. The suspect would be keen to appear last in the lineup so as to minimise the chances of being positively identified by witnesses. On the other hand, law enforcement agents would be keen to present the suspect first in the lineup so as to bolster the state case through positive eyewitness identifications. On paper, a logical compromise would be to position the suspect more centrally but this would create other problems. It would eventually become common knowledge among potential witnesses that in police parades suspects were usually positioned centrally. This would be prejudicial to the interests of suspects. It would also raise doubts on whether or not a witness who makes a correct identification did not merely guess. The current practice of deciding the suspect's position on a random basis therefore remains the most reasonable solution.

With regard to the courts, the finding suggesting that it is easier for witnesses to correctly identify a suspect when he or she is positioned first rather than last, would imply the following. That everything else being equal and subject to statutory and common law rules governing sufficiency of evidence, correct eyewitness identifications made from target-last lineups should be given more weight than correct identifications from target-first lineups. In other words, in cases where evidence *aliunde* was not conclusive or was simply not forthcoming, a court would be justified if it acquitted the suspect because the only evidence against him or her was

a positive identification from a lineup where the suspect was presented first. A conviction would be justified however when the same circumstances prevailed but the identification was made from a target-last lineup.

The results showing that eyewitness confidence is not a good predictor of eyewitness accuracy were expected and serve to reinforce the call on police investigators, Public Prosecutors, and the bench not to read too much into the confidence exuded by a witness. As the judge in *State versus Ndlovu & Others* (1985) pointed out, "confidence and sincerity in identifying witnesses is not enough" and it is necessary to always seek corroboration from other sources. The fact that as much as 18% of the less confident subjects still made correct identifications reiterates the point that witnesses who appear not confident should not be dismissed off-hand because they still may be accurate in their identifications.

The foregoing discussion and suggestions need to be taken in light of some major limitations of the study. To illustrate some of the limitations of the study, an analogy will be drawn between the conditions under which the experiment was conducted and those that exist in a typical armed bank robbery. To start with, stress levels in an armed robbery are way too high compared to the classroom conditions under which the subjects were tested. In addition, the weapon focus phenomenon present in armed robberies was absent in the laboratory.

Furthermore, the subjects in the study knew in advance that they were going to take part in a psychology experiment and even though they were not aware of the real nature of the experiment, their awareness levels may have been heightened. In robbery cases the victims and witnesses are caught unaware. The study also lacked the "criminal" element that is usually introduced in similar studies through staged crimes. This was not a major limitation however because in real life not all crimes are committed in a way that highly arouses witnesses. In fact, in such cases as fraud and "theft by false pretences", the victims are not even aware that they are being conned until much later when the culprit is gone. Another apparent weakness of the study, which may in fact be a strength, was its use of photographs as opposed to a live lineup. As Wells et al (1998) note, most identifications of criminal suspects are from photos rather than live lineups.

In summary, the study provided promising preliminary evidence of the operation of the immediate identification strategy among identification parade witnesses. However the procedure adopted in the study did not allow for as good an investigation of the operation of the rival delayed identification strategy. Another study to further explore the operation of the concepts of immediate and delayed identification would be in order. It would be advisable in such a study to deliberately encourage the adoption by witnesses of the DIS by instructing half the subjects that they would be allowed to view sequential lineup members more than once if they so wished. The other half would be encouraged to employ the IIS through the usual briefing that lineup members would be shown only once. An even closer examination of positional effects could also be made by introducing a third condition where the suspect is positioned centrally in addition to being positioned first and last.

References

- Bartol ,C..R and Bartol ,A.M (1994)** : Psychology and Law : Research and Application, 2nd Edition, Carlifornia, Brookes/Cole.
- Bennet, P.J (1986)**: Face Recall: A Police Perspective. *Human and Learning*,5,197-202.
- Bothwell, R.K, Deffenbacher, K.A, and Brigham, J.C, (1987)**: Correlation of Eyewitness Accuracy and Confidence: The Optimality Hypothesis revisited. *Journal of Applied Psychology*, 72, 691-695.
- Buzzard, J, May, R, and Howard, N.M, (1982)**: Phipson on Evidence, 13th Edition, London, Sweet and Maxwell.
- Chiroro, P and Valentine, T (1995)**: An investigation of the Contact Hypothesis of the Own-race Bias in Face Recognition. *The Quarterly Journal of Experimental Psychology*, 48A(4), 879-894.
- Chung, M,and Thomson, D.M (1995)**: Development of face recognition. *British Journal of Psychology*, 86, 55-87.
- Clifford,B.R, and Hollin, C. (1981)**: Effects of type of incident and the number of perpetrators on eyewitness memory. *Journal of Applied Psychology*, 66, 364-370.
- Clifford, B.R, and Scott, J, (1978)**: Individual and Situational factors in Eyewitness Testimony. *Journal of Applied Psychology*, 63, 352-359.
- Feltoe, G (1990)**: A Guide to Zimbabwean Law of Delict, 2nd Edition, Harare, Legal Resources Foundation.
- Gruneberg, M and Morris, P, (1992)**: Aspects of Memory, 2nd Edition, London, Routeledge.

Hayes, N. (1998): Foundations of Psychology:- An Introductory Text. Thomas Nelson, Surrey.

Huff, C. (1987): Wrongful Convictions: Societal Tolerance of Injustice. *Research in Social Problems and Public Policy*, 4, 99-115.

Lahey, B.B, (1998): Psychology: An Introduction, 6th Edition, Chicago, McGraw-Hill.

Laughery, K.R and Wogalter, M.S (1989): *Forensic Applications of facial memory research.* In Young, A.W, and Ellis, H.D (Eds): Handbook of Research on Face Processing. pp 519-555, Amsterdam, North-Holland Publishing.

Leippe, M.R, (1980): Effects of Integrative Memorial and Cognitive processes on the correspondence of eyewitness accuracy and confidence. *Law and Human Behaviour*, 4, 261-274.

Lindsay, R.C.L, Pozzulo, J.D, Craig, W, Lee, K, and Corber, S. (1997): Simultaneous Lineups, Sequential Lineups, and Showups: Eyewitness Identification Decisions of Adults and Children. *Law and Human Behaviour*, 21(4), 391-403.

Lindsay, R.C.L, and Wells, G.L, (1985): Improving Eyewitness Identifications from Lineups: Simultaneous versus Sequential lineup presentation. *Journal of Applied Psychology*, 70, 556-564.

Lindsay, R.C.L, Wells, G.L and Rumpel, C.M (1981): Can people detect eyewitness identification within and across situations. *Journal of Applied Psychology*, 66, 79-89

Loftus,E.F, (1979): Eyewitness Testimony. Cambridge, Harvard University Press.

Loftus, E, and Doyle , J, (1992): Eyewitness Testimony: Civil and Criminal. Charlottesville, Michie.

Loftus ,E.F, Schooler, J.W, Boone , S.M, and Kline , D.(1987): Time went by slowly: Overestimation of event duration by males and females. *Applied Cognitive Psychology*, 1, 3-13.

Minium,E.W. (1978): Statistical Reasoning in Psychology and Education,2nd Edition,New York, John Wiley and Sons.

Merrit, J.E (1999): Wrongful Convictions and Eyewitness Testimony, Denver, Martindale-Hubbel

US Department of Justice (1999): Eyewitness Evidence: A Guide for Law Enforcement.

Shoemaker, D.J, South, D.R, and Lowe, J, (1973): Facial Stereotypes of Deviants and judgement of guilt or innocence. *Social Forces*, 51, 427-433.

State versus Mavunga (1982): cited in Zimbabwe Law Reports, 1, 65.

State versus Ndlovu & Others (1985): cited in Zimbabwe Law Reports, 2, 261.

Wagenaar (1988): Identifying Ivan.

Wells, G.L,(1978): Applied eyewitness testimony research.System variables and estimator variables. *Journal of Personality and Social Psychology*.36,1546-1557.

Wells, G.L, (1984): The Psychology of Lineup Identifications. *Journal of Applied Social* 89-103.

Wells, G.L, Leippe, M.R, and Ostrom, T.M, (1979): Guidelines for Empirically Assessing the Fairness of a lineup. *Law and Human Behaviour*, 3, 285-294.

Wells, G.L, Lindsay, R.C.L, and Ferguson, M, ((1979): Accuracy, Confidence and Juror Perceptions in Eyewitness Identification. *Journal of Applied Psychology*, 64, 440-448.

Wells, G.L, and Luus , C.A.E, (1990): Police Lineups as Experiments: Social Methodology as a Framework for Properly Conducted Lineups. *Personality and Social Psychology Bulletin*, 16, 106-117.

Wells, G.L, Small, M, Penrod, S, Malpass, R.S, Fulero, S.M, and Brimacombe, C.A.E, (1998): Eyewitness Identification Procedures: Recommendations for lineups and photospreads. *Law and Human Behaviour*, 22(6), 603-645.