

**MISINFORMATION EFFECT IN MEN AND
WOMEN CRIME SCENARIO EYE-WITNESS
RECALL**

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MISINFORMATION EFFECT IN MEN AND WOMEN CRIME SCENARIO EYE-WITNESS RECALL

by

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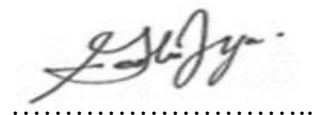
**Thesis submitted in fulfilment of the requirements
for the degree of
Bachelor of Science in Forensic Science**

February 2025

CERTIFICATE

This certifies that the dissertation entitled “MISINFORMATION EFFECT IN MEN AND WOMEN CRIME SCENARIO EYE-WITNESS RECALL” is the authentic documentation of the research conducted by “NURSYAFIZAH BINTI AZMI” under my supervision between August 2024 and February 2025. I have read this dissertation and believe it to be completely sufficient in scope and quality to be submitted as a partial fulfilment of the requirements for the Bachelor of Science (Honours) in Forensic Science degree, and it complies with acceptable standards of scholarly presentation.

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DECLARATION

I hereby declare that this dissertation is the result of my own research, unless otherwise stated and duly acknowledged. I additionally declare that it has not been submitted in its entirety, either previously or concurrently, for any other degree at Universiti Sains Malaysia or any other institution. I grant Universiti Sains Malaysia the right to use the dissertation for teaching, research, and promotional purposes.



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LIST OF ABBREVIATIONS

FYP	Final Year Project
CJS	Criminal Justice System
US	United States
RI	Retroactive Interference
PTSD	Post-Traumatic Stress Disorder
IO	Investigating Officer
MCI	Mild Cognitive Impairment
SLT	Social Learning Theory
CDT	Cognitive Dissonance Theory
CDS	Cognitive Dissonance State
HREC	Human Research Ethics Committee
DoSM	Departments of Statistic Malaysia
PIS	Participant Information Sheet
PCF	Participant Consent Form
SPSS	Statistical Package for the Social Sciences
MMHA	Malaysian Mental Health Association
USM	Universiti Sains Malaysia
HUSM	Hospital Universiti Sains Malaysia

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ABSTRAK

Saksi jenayah adalah komponen penting dalam sistem keadilan jenayah, namun ingatan manusia mudah dibentuk dan berisiko untuk diherot akibat pendedahan kepada maklumat salah selepas sesuatu peristiwa. Fenomena ini dikenali sebagai *misinformation effect*. Kajian ini meneroka *misinformation effect* dalam ingatan saksi bertumpuan kepada perbezaan respons memori antara jantina di kalangan orang Malaysia yang dewasa. Seramai 12 orang telah mengambil bahagian dalam kajian ini (lelaki = 6, perempuan = 6) dan peserta dibahagikan kepada dua kumpulan secara rawak, iaitu kumpulan kawalan dan kumpulan eksperimen. Menggunakan reka bentuk kuasi eksperimen keratan rentas, peserta lelaki dan perempuan telah ditunjukkan video yang merakamkan jenayah dan menjalani satu temu bual yang meminta mereka mengingati kejadian itu. Peserta dalam kumpulan eksperimen diberi maklumat yang mengelirukan berbanding peserta dalam kumpulan kawalan yang ditanya soalan neutral. Penemuan mendedahkan beberapa corak respons ingatan yang memberi laluan kepada tema-tema seperti herotan ingatan, keyakinan dalam ingatan, penentangan terhadap maklumat salah, *misinformation effect*, tafsiran subjektif dalam ingatan, dan penceritaan subjektif awal kejadian. Perbezaan jantina dalam kalangan tema ini juga diterokai. Implikasi dapatan termasuk menunjukkan kelemahan ingatan dalam pendedahan kepada maklumat luar – yang boleh diperkenalkan secara sengaja bertujuan untuk mengelirukan – terutamanya dalam sistem keadilan jenayah. Herotan ingatan yang dilaporkan ini bersama-sama dengan corak perbezaan di kalangan jantina boleh digunakan dalam pembangunan dan penggunaan garis panduan temu bual saksi yang meminimumkan maklumat yang mengelirukan serta pendekatan berasaskan jantina.

ABSTRACT

Eyewitness testimony is a crucial component of the criminal justice system, yet human memory is malleable and prone to distortion due to post-event misinformation. This phenomenon is known as the misinformation effect. This study explored the misinformation effect in eyewitness memory focusing on gender differences in memory responses among adult Malaysians. A total of 12 people participated in this study (male = 6, female = 6) and the participants were randomly divided into two groups, namely the control group and the experimental group. Utilizing a cross-sectional quasi-experimental design, male and female participants were shown a video depicting a crime and underwent an interview asking them to recall the incident. The participants in the experimental group were fed misleading information as opposed to the participants in the control group who were asked neutral questions. The findings revealed some patterns of memory responses which gave way to the themes: memory distortion, confidence in recall, resistance to misinformation, misinformation effect, subjective interpretation in recall and initial account of the incident. Gender differences in amongst these themes are also explored. Some implications of the study include highlighting the vulnerability of memory in the exposure to external information – which could be introduced intentionally for the purpose of misleading – especially in the criminal justice system. These reported memory distortions along with patterns from gender differences can be utilized in the development and application of a witness interview guideline that minimizes misleading information as well as a gender-based approach.

CHAPTER 1: INTRODUCTION

This Final Year Project (FYP) aimed to expand the pioneering work of Loftus (1974) on misinformation effect, specifically amongst male and female adults within a controlled environment. This criminology FYP research addressed the memory reliability of eyewitnesses in a criminal case. It also explored how memory can be distorted or affected by misleading questions. This section focuses primarily on the following: study background, problem statement and study rationale, objectives, operational definitions, research questions, themes analysed, significance of research and the outline of dissertation.

1.0 STUDY BACKGROUND

This section covers two contexts surrounding the research. The first background is statistics related to wrongful convictions. The second background is the effect of unreliable witness testimony to the Criminal Justice System (CJS).

1.1 Statistics Related to Wrongful Convictions

Wrongful conviction is a situation where a factually innocent person is convicted of a crime they did not commit or a convicted person's right is violated by procedural errors (National Institute of Justice, 2023; Yearn & Md. Said, 2023). It is a global miscarry of justice claimed as challenging to be assessed with little knowable rate (National Institute of Justice, 2023). However, an estimate can be made by looking at the statistics of exoneration.

The National Registry of Exonerations (2024) reported that there has been a total of 3,478 exonerations in the United States (US) from 1989 to the end of 2023 with 14.6 years average time a person lost, due to wrongful imprisonment. To address and fight against this problem, the Innocence Project was established and has been the frontliner in criminal justice reform to exonerate wrongfully convicted prisoners in the US (Innocence Project, 2024a). There have been 251 successful projects thus far with mistaken witness identification and false testimonies being two of the primary causes (Innocence Project, 2024b, 2024c; The National Registry of Exonerations, 2024). Other than that, the number of documented wrongful conviction and subsequent successful exonerations in European countries totalled to 132 cases dating from 1970 to 2019 (European Registry of Exonerations, 2020). Meanwhile, there were 30 and nearly 100 cases of wrongful convictions reported in Canada and Australia respectively (Innocence Canada, 2024a; Meeton, 2020).

The Innocence Project and organisations of similar purposes operate in many developed countries such as United Kingdom, Canada and Australia (Bridge of Hope, 2024; Innocence Project London, 2020; Innocence Canada, 2024b). However, there are very few such projects and organisations in less developed countries, which could be a contributor to wrongful conviction cases and underreporting of exoneration in many countries. Not only does it mean less initiative in righting the wrongs in the CJS, but this data poverty also dampens effort in researching the problem.

1.2 The Effect of Unreliable Witness Testimony to the Criminal Justice System

Testimonies from eyewitnesses play a crucial role in the decision-making process of the CJS (Liu, 2021). However, human memories can be altered from retroactive interference (RI) which is a process where new information interferes with previously known information (Garlitch & Wahlheim, 2020). Common distortion in memories from external factors vary, for example from mistaking the colour of a gate-away car to completely making up new details of the criminal event. From a cognitive psychological standpoint, memory distortion can be related to the process of remembrance itself.

The Constructive Memory Theory by Bartlett (1932) suggests that memory is an active process of building and rebuilding memories based on prior knowledge and experiences which can result in the formation of plausible, but inaccurate narrative of past events. There are several scenarios that could occur, one of which is when an individual is given certain information, a mental representation or schema of such information will be activated and cause distortion in the individual's recollection of the event (Varga, Morton, & Preston, 2022). For instance, if individuals are led to believe they saw a red car, their existing knowledge and experiences related to red cars can influence their memory which subsequently can lead to the integration of suggested details into their recollection of the event, even if it was not originally present.

There are also cases of confabulation where an individual finds it difficult to remember something, and what happens is that the individual would completely reconstruct the memory through dislocation of the event in time or fabricating new details to fill in memory gaps (Michaelian, 2021). Legal authorities may take advantage of such malleability in

memory to influence witness testimony such as using leading questions, potentially altering the course of the trial (Helm, 2021). Additionally, misinformation can also be introduced by peers, even without malicious intent. Puddifoot (2020) found that participants were more susceptible to incorporate misleading information from a familiar peer into their memory compared to information from a written source. This tendency highlights the risk of memory contamination when witnesses discuss a crime with each other, potentially leading to the blending of true and false details.

1.3 Problem Statement and Study Rationale

There are two problem statements underlying this research. The first is the negative impacts of misinformation in legal proceedings. The second is the need for gender-specific research for the misinformation effect.

1.3.1 Impacts of Wrongful Convictions

Eyewitness testimony is considered as an important form of evidence in the CJS (Liu, 2021). However, the inherent subjectivity of human perception can compromise the reliability of eyewitness testimony. This causes the introduction of misinformation into legal proceedings and potentially wrongful conviction, damaging the integrity of the CJS (Gonzalez, 2021). Other than that, it also brings many consequences to the wrongly convicted and the CJS.

For starters, wrongful incarceration of innocent individuals has profound psychological consequences that can severely impact their mental health. Legner (2022) stated that depression, post-traumatic stress disorder (PTSD), and anxiety are the most common

mental disorders suffered by wrongfully convicted people. This could be attributed from the exposure to traumatic experiences during imprisonment, such as witnessing or encountering physical violence (Kukucka, Horodyski, & Dardis, 2022). Additionally, wrongful imprisonment causes loss of valuable years of the prisoners' life as many of them were liberated years after their incarceration while others even tragically passed away in prison and were only exonerated posthumously (Gonzalez, 2021).

Other than that, misinformation in court may erode public's confidence and trust in the government and the CJS as well as raising doubts about the reliability of the investigation and prosecution (Norris & Mullinix, 2020). Though it is difficult to quantify the prevalence of misinformation effect, there have been records of false imprisonments in Malaysia. For example, Free Malaysia Today (FMT) reported a case where a man in Ipoh was unlawfully detained by the police for 106 days for an alleged drug trafficking offence (Anbalagan, 2023). The man managed to prove his case and held the government liable for the former investigating officer (IO)'s action of document forgery which had brought about his false imprisonment. Not only can a case like this reduce the public's faith in the CJS, but it also adds to the victims' trauma by enabling the real offenders to avoid accountability (Gonzalez, 2021).

1.3.2 The Need for Gender-Specific Research for the Misinformation Effect

In addition to the misinformation itself, contrasting responses by witnesses of different genders might affect the reliability and clarity of witness testimonies. Understanding these gender-specific differences in memory recall can provide valuable insights in improving investigative techniques and legal procedures.

Studies suggest that men and women may have cognitive and social differences that account for disparity in the prevalence of misinformation effect. For example, women are reported to have greater cognitive reserve compared to men (Levine, Gross, & Briceño, 2021) which raises the question of whether women would be less susceptible to misinformation effect. Women also show faster cognitive progression and decline than men (Levine, Gross, & Briceño, 2021). This makes them vulnerable to mild cognitive impairment (MCI) with a higher lifetime risk of Alzheimer's disease compared to men (Tahami Monfared et al., 2022; Arenaza-Urquijo et al., 2024); which introduces a contradicting hypothesis of whether women are more vulnerable to misinformation effect.

Conversely, Johannsdottir et al. (2021) provided evidence that both genders are equally likely to fabricate memories in response to external emotional factors, but women are more prone to believe those fabricated memories. These previous gender-based studies on misinformation may have real consequences in court testimonies. Thus, a study of the misinformation effect differences between the genders might be a helpful addition to knowledge on misinformation effect and the Malaysian CJS.

1.4 Objectives

This section highlights the general objective of this research followed by the specific objectives of this research. There is one general objective followed by two specific objectives for this study.

1.4.1 General Objective

To compare the misinformation effect between men and women in a crime scenario.

1.4.2 Specific Objectives

1. To explore the effect of misinformation on the accuracy of memory recall
2. To explore the differences of memory recall in male and female respondents

1.5 Operational Definitions

Terms are defined in detail in this section. The first term is eye-witness from the angle of the Malaysian CJS and the second term is memory. The third is misinformation effect, followed by confabulation.

1.5.1 Eye-Witness

In defining witness, section one of the Malaysian Witness Protection Act 2009 (Act 696) is referred to. An eye-witness is defined as a person giving evidence or statement in a criminal proceeding related to the possible commission of an offence or a person providing information or assistance to an authority concerning an offence (section 1, Act 696). The witness can either be a character witness, expert witness, or laymen eyewitness.

A character witness provides evidence about a person's character traits or reputation, seeking to raise reasonable doubt and influence the outcome of a legal case (Putri, 2024).

A character witness could be family members, close friends, or colleagues. An expert witness is a qualified individual who provides expert testimony or specialized knowledge in a specific field. Some of their roles are to give insights into potential outcomes of an

action or explain certain behaviours (Lubet & Boals, 2020). Examples of an expert witness are medical doctors, forensic experts, police inspectors, and psychiatrists.

While character and expert witnesses offer indirect evidence, a laymen eyewitness, or percipient witness, provides direct testimony based on their personal observation of an event. They are called upon to recount what they saw, heard, or experienced firsthand. Their testimony is based solely on personal observation of the incident (Latham, 2021). This type of witness will be the sole focus of this research.

1.5.2 Memory

Memory is generally the capacity to remember information over time. In cognitive psychology, Bartlett (1932) explained memory as an active process of reconstruction and that when a person recalls a memory, they do not regain the exact copy of said memory. Instead, memory is reconstructed by incorporating an individual's prior knowledge and assumptions.

Memory can be categorized based on their time span which are sensory memory, working memory (short-term memory), and long-term memory (Grover et al., 2022; Wan et al., 2022). Sensory memory, a type of ultra-short-term memory; allows individuals to retain sensory impressions like sights, sounds, smells, tastes, and tactile sensations for a fleeting moment after the original stimulus disappears (Wan et al., 2022). Short-term memory holds a limited amount of information for a short duration, typically between 10 and 60 seconds (Gupta, Goel, & Deepak, 2020) while long-term memory can last for years and up to a lifetime (Aprilia & Aminatun, 2022)

Bartlett (1932) introduced the Schema Theory in which experiences of individuals are packeted into active developing patterns of organized setting referred to as “schema”. This concept was represented as programme instructions that encode external information into the system (Wagoner, 2023). To enhance memory comprehension, schemas are used to fill in the gaps by incorporating new information into existing knowledge structures (Meylani, 2024). Additionally, memories can be readily distorted to fit personal experiences and cultural norms. Bartlett (1932) highlighted how cultural biases can shape memory recall. British participants, when recounting the North American Indian folktale "The War of the Ghosts," altered unfamiliar elements to align with their own cultural understanding, such as replacing "canoes" with "boats" (Wagoner, 2023).

Both long-term memory and short-term memory are associated with this FYP as misinformation effect which deals with how false information leads to memory distortion is the primary focus in this research. On one hand, the Interference Theory (Bergström, 1893) proposed that memory distortion is due to long-term memories blocking the retrieval of targeted memory (Pickrell et al., 2022) which represents the witnesses' memory of the incident. On the other hand, (Sanderson, Gignac, & Ecker, 2021) related memory distortion with the integration of suggested misinformation into the short-term memory.

1.5.3 Misinformation Effect

The misinformation effect demonstrates how easily human memory can be distorted by post-event information. Individuals may recall events in a way that aligns with suggested details, even if those details are false. This phenomenon raises concerns about the reliability of eyewitness testimony, as witnesses may inadvertently incorporate elements of