THE ROLE OF EMOTIONAL AND FACTUAL RETELLING ON MEMORY ACCURACY IN EYEWITNESS TESTIMONY

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Bachelor of Science with Honours
(Cognitive Science)
2015
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THE ROLE OF EMOTIONAL AND FACTUAL RETELLING ON MEMORY ACCURACY IN EYEWITNESS TESTIMONY

LAU CHOON NING

This project is submitted
in partial fulfilment of the requirements for a
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ABSTRACT

Eyewitnesses are normally talking about the crimes they have seen and involved in based on their memory. Different ways on how an eyewitness talks about the crime can influence the information collected. This research is aimed to investigate the differences of pre-retelling and post-retelling on memory accuracy and error between emotion, factual and control conditions. 30 participants were involved in the research. Those participants were requested to watch a video about a robbery for 3 minutes and recall the events by listing down the related details. Then, they were assigned to three different retelling conditions which are factual, emotional and control condition. The participants would be retelling the events in different ways based on the conditions. Stratified random sampling technique was used in this research so that the numbers of male and female participants were equal. Repeated measure ANOVA was used to test the hypotheses of the study. Result showed that emotion can affects the eyewitness memory significantly.

Keywords: eyewitness memory, emotional retelling, factual retelling, memory accuracy, memory error
ABSTRAK


Kata kunci: ingatan saksi, penceritaan semula emosi, penceritaan semula fakta, ketepatan ingatan, kesilapan ingatan
CHAPTER ONE
INTRODUCTION

This research is done to study about the eyewitnesses’ memories and their emotions. Eyewitnesses normally talk about the crimes they have encountered. Hence, the recall of the memories of eyewitnesses is important. Different ways on how an eyewitness describes about the crime can influence the collection of information. Someone can recall about the crime by relating it to their negative emotions or by providing a detailed report to the authority. In this study, it is investigated the roles of factual versus emotional retelling on memory accuracy of individuals who have eye witnessed a crime.

Background of study

Someone who witnesses a crime must be interviewed in order to gather detailed information about the past events. However, the accuracy and reliability of eyewitness testimony has often been concerned especially for those who are convicted to the crime. Many studies showed that witnesses often fail to recall back the event or report inaccurate information (Davies & Logie, 1993). Soleti, Curci, Bianco & Lanciano (2012) proved that the techniques of interviewing and ways to ask the questions can influence the report of eyewitness testimony. In that research, participants were assigned to three conditions: emotional retelling (focus on emotional of witness), factual retelling (focus on facts of event) and control condition as well. The results showed that emotion can influence the memory accuracy of eyewitness. Hence, the role of emotion is very important in memory retrieval of eyewitness.

As a result, this research was to examine the role of emotional retelling and factual retelling on memory accuracy in eyewitness. The research is carried out among undergraduates in Universiti Malaysia Sarawak (UNIMAS).
Problem Statement

Nowadays, there is a rising of criminal case in our society. For examples, robbery, murder case and rape case. When a crime happens, an eyewitness testimony plays an important role to provide information about the crime. The person will be responsible to provide information such as venue, time, reason, intention of criminal, characteristic of people involved including victims and criminals and other details of the case.

However, there is a problem when the eyewitness involved cannot recall the memory successfully. Many experimental researches have explored some reasons that, under different conditions, might improve or impair memory accuracy of eyewitness. The interviewing techniques or the way in which the questions are asked can influence and distort the reports of memory for the event (Soleti, Curci, Bianco & Lanciano, 2012). Recall of memory may be influenced by the memory source and external information.

Hence, how eyewitnesses describe a crime may cause implication for the memory accuracy. In this study, the issue investigated is related to the emotion of the eyewitness. Do eyewitnesses who talk about their emotions influence their eyewitness memory recall? Some researchers suggested that emotion may enhance memory performance. Instead, some may even believe that emotion reduces the memory performances. There was no consistent or conclusive finding whether emotion helps or hinders memory recall. As a result, this research was to evaluate the role of emotional retelling and factual retelling on memory accuracy in eyewitness.
Research Objectives

General Objective

The main objective of this research was to examine the differences of pre-retelling and post-retelling on memory accuracy and error between emotion and factual and control condition.

Specific Objective

The specific objective of this research is:

i) To investigate the differences on number of memory accuracy based on the factual, emotional and control condition.

ii) To investigate the differences on number of memory error occurred based on the factual, emotional and control condition.

Research Hypothesis

Based on the research objectives, several null hypotheses are formulated:

Table 1: Null Hypotheses of Study

<table>
<thead>
<tr>
<th>Null hypothesis (H₀)</th>
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<tbody>
<tr>
<td>H₀₁</td>
<td>There is no significance difference on number of memory accuracy based on factual, emotional and control condition.</td>
</tr>
<tr>
<td>H₀₂</td>
<td>There is no significance difference on number of memory error occurred based on factual, emotional and control condition.</td>
</tr>
</tbody>
</table>
Research Framework

Based on the research hypothesis, research framework is presented in figure 1.

**Figure 1. Framework for the research.**

**Significant of study**

This research was aimed to find out the effect of emotional retelling and factual retelling on memory accuracy of eyewitness. By doing this research, researcher is easier to find out the best retelling condition for eyewitness to recall their memory. Hence, a good interview technique was identified. This can be beneficial to improve the memory performances of the eyewitness during the retrieval of memory. Besides, it can reduce the memory error of witnesses and avoid the situation that may influence the memory retrieval. Apart from that, the research findings contributed the literature in the field which is useful for the future researches.

**Definition of terms**

**Conceptual Definition**

**Emotion.** Emotion is an affective state of consciousness in which happy, joy, angry, sorrow, fear, hate or any kinds of feelings experienced. Emotion is always being associated and considered reciprocally influential with mood, temperament, personality, disposition and
motivation. Hockenbury and Hockenbury (2007) found that emotion is a complicated psychological state that consists of three different components which are subjective experience, physiological response and behavioral or expressive response.

**Memory.** Memory is the process in which information is encoded, stored, and retrieved. Encoding enables our senses to pick up the information from the outside world in the forms of chemical and physical stimuli. Then the information will be stored and the memory is put into the encoding process. The memory is stored to maintain the information over periods of time. Then, memory is recalled back to be used in a process or activity (Zimmermann, 2014).

**Operation Definition**

**Emotion.** In this research, emotion is referred to the emotional reaction of participants when they watch the video. Participants would be watching a video about robbery and they played the role of eyewitness in this case. They will experience the feel of fear, angry, panic, fright, nervous or other negative emotion reactions. Furthermore, participants that are assigned to emotional retelling condition will discuss about their emotional reactions to the event in the group. They discussed or shared their emotional reaction freely with each other.

**Memory.** In this study, memory is referred to the eyewitness memory. After those participants done watching the video, they will be instructed to recall back their memory by listing down the details of the case. Hence, participants will undergo the memory retrieval process when they write down the information of event. After that, participants will be assigned to one of the three retelling conditions. These three retelling conditions may influence eyewitness memory in the group discussion. Shortly after the retelling phase, eyewitness recalled their memories again by writing down the details of the video. Then, the results are analyzed to test the eyewitness memory accuracy and error.
Scope of study

This research was conducted in Universiti Malaysia Sarawak (UNIMAS). Due to the time constraints, the study is limited to the students of Faculty of Cognitive Sciences and Human Resource from UNIMAS. All of them are Cognitive Science students. Limitation of time had causes this study merely focused on specific population only.

Summary

This research study was aimed to find out the suitable retelling condition when eyewitness recalls the memory of the event. Thus, it can be suggested as an appropriate method to improve the eyewitness memory accuracy.
CHAPTER TWO
LITERATURE REVIEW

Memory is a cognitive process that encode, store, retain and then recall information and prior experiences in the human brain (Bjork & Bjork, 1996). Cognitive psychologist, Margaret W. Matlin described that memory is a process of saving information over time. While other stated that memory is an ability to apply our previous experiences and knowledge to decide our future path (Zimmermann, 2014). Zimmermann (2014) also said that most of the people defined memory as a study for a test or recall where we put the car keys. Therefore, memory is necessary in our daily lives. To be able to function in the present or move forward, we must rely on our memory. Hence, memory is important as it helps human to remember, learn and adapt from the past experiences. Subsequently, we can recall our learned facts, experiences, impressions, skills or habits to make decision, conduct activity and build relationship as well (Bjork & Bjork, 1996).

Human Memory

Cherry (2009), a psychology expert defined memory as having three major processes which include encoding, storage and retrieval. To build new memories, information that was obtained and learned must be transformed into usable form. This process of transformation is known as encoding. When the information is encoded successfully, it is stored in our memory. The stored memory is in less awareness state unless it is needed by the brain. Hence, retrieval process brings the stored memory into conscious awareness then allows human to use it.

According to Zimmermann (2014), before the information from environment is encoded, it must be picked up by one or more of the human senses. This sensory information will be stored for a very short period of time, the visual information normally is stored not longer than half-second while auditory information can store for three to four seconds. Then, some information will pass into the short-term memory. As mentioned by Cherry (2009),
short-term memory also called as active memory. It is the information that we are aware of or conscious about. In short-term memory, the information will be stored for about 20 to 30 seconds. Then, the important memories are transferred to the next stage and stored in long-term memory. In Freudian psychology, it is also known as the preconscious and unconscious mind. Although long-term memory is largely outside of our awareness, it can be recalled into working memory when it is needed to be used.

In the study of Zimmermann (2014), there are several types of memory such as implicit memory and explicit memory. Implicit memory is referred to unconscious and automatic memory. It requires a little effort to recall back. It uses past experiences and knowledge to remember and do things. We can do things such as walking, cycling, and swimming without thinking about them or recalling back the steps. Procedural memory is one of the examples of implicit memory.

However, explicit memory or declarative memory needs more effort to recall. Explicit memory consists of semantic and episodic memory. Semantic memory is more to common knowledge, it does not related to the past experiences. For example, name of a country, knowledge about the grass is green, knowledge about how to use the tools and remembering what fish is. For episodic memory, it is a unique recollection of a certain events or an episode. There have some special details such as how we felt, time and place that is associated with episodic memory (Zimmermann (2014). For eyewitnesses, their episodic memory is important to recall back the details of event that had been seen.

Memory recall

To use stored memory to make decision, solve problem or complete task, we need to retrieve the information from long-term memory (Cherry, 2009). This retrieval enables us to recall information, events and memories from the past (Nobel & Shiffrin, 2001). During the process of collecting testimony, eyewitness memory plays an important role. They need to
recall back the detailed information as much as possible. Memory retrieval returns our memories from the long-term memory to the short-term or working memory so that we can use them again. Memory recall is actually a mirror image of the encoding process. After memory has been used, it is re-stored back to the long-term storage and re-consolidating then strengthening (May & Einstein, 2013). However, memory recall can be affected by different factors such as attention and motivation. Besides that, memory recall is also divided in different types such as free memory recall, cued memory recall and serial memory recall (Nobel & Shiffrin, 2001).

Factors that affect memory recall

There are some factors that can influence memory recall. These factors may also reduce or increase the accuracy of eyewitness testimony indirectly. Bernard (1966) said the most significant factors that can influence the memory recall are motivation and attention. Someone who has clear motivation, intention and incentive to remember certain information can usually remember that information more quickly. The range of motivation is wide from monetary to personal intention. If someone is given the reward after remembering certain information, that individual can remember the information more clearly and correctly. For example, a testing was done on the effect of motivation on memory recall in which students were asked to remember certain vocabularies. The students were divided into two groups. In one group, each vocabulary that was remembered correctly by the participants will be given monetary reward. The result shows that students who were offered the reward can remember more correct vocabularies than the students who were not given any reward. Besides, motivation such as wanting to do well on a test, wanting to remember a name of a new friend and wanting to complete a task perfectly can all improve a better memory recall (Ngaosuvan, 2004).
Apart from that, research showed that attention of individual can affect the memory recall significantly (Dudukovic, Dubrow & Wagner, 2009). However, attention is actually influence the memory recall during the encoding process. If someone’s attention is focused on another task or multiple tasks, then the memory encoding process will become weaker. When someone’s attention is not focused on the specific information, that information will not be encoded properly in the brain and hence it is harder to recall that information correctly. A research has been done to test the impact of attention on memory recall. Participants were given a talk on health care, but they are in fact focused on where will be going for lunch after that indeed. Their attentions are not focused on the information about health care actually and hence that information will not be encoded well in the brain. When students were asked to recall the information to complete questionnaires, the information about the talk is easy to be recalled. As a result, attention of an individual can affect the memory recall unless the information has already been affected by attention during the encoding phase of memory (Dudukovic et al., 2009).

Free memory recall

When collecting the testimony, eyewitness is usually free to recall the events. Free recall means that someone is allowed to recall memory in a randomly order and does not have specific way. Free memory recall is always used in the psychological and educational testing. When someone is given a list of information to remember, he or she may not remember the information in a specific or particular listing order. It is “free” for someone to recall the memory in any order (Dawson, 1995). Furthermore, free memory recall usually shows indication of primacy effect (recall the items exist at the beginning of the list earlier which is stored in the long-term memory), regency effect (recall the items exist at the end of the list earlier which is stored in the short-term memory) or contiguity effect (recall the items from neighboring positions in the list) (May & Einstein, 2013).
Cued memory recall

Eyewitness sometimes can recall back the memory easily with particular cues. This is known as cued memory recall. Cued recall states that the person recall the memory with certain cues. Someone uses the cues or guides to remember the information then recall back with that cue. These memory cues can range from visual like particular colors or image to auditory such as sound or music (Moult, 2011). A certain smell or taste can be the memory cues also. This form of memory cues are known as stimulus-response recall (May & Einstein, 2013). Researches proved that someone can recall the information with cues more easily than that without cues. In addition, cued recall can be occurred naturally and without planning. For example, somebody witnesses an event while a certain song is playing or certain smell is present. Then, when that person is confronted with the same cue, even years later, he or she may recall the event automatically (Moult, 2011).

Serial memory recall

Serial memory recall is also common for eyewitness to recall the memory. Serial recall refers to an individual recalls the information or events in the order in which they had occurred. Serial recall helps the people to remember the things happened in correct order and also the sequence of the different parts of a sentence (May & Einstein, 2013). Serial recall is also important for us to store information in long-term and short-term memory. A person needs serial recall to remember the proper order of an event that had occurred in life. Hence, serial recall is needed for eyewitness to remember recent information such as remembering the proper order of events that has happened (Haberlandt, 2011).

Theory of memory recall

There are lots of theory related to the memory retrieval such as theory of encoding specificity which was proposed by Endel Tulving in 1980s and levels-of-processing effect theory that suggested by Fergus Craik and Robert Lockhart (May & Einstein, 2013). Besides,
associative strength theory is the theory about an effective cue helps in memory retrieval (Ellis & Hunt, 1993).

Theory of encoding specificity. Theory of encoding specificity states that memory uses information from the memory trace and environment in which the memory is recalled. Process of memory recall is better and easier when the environment of learning and recall phases are similar. Furthermore, emotional material is better remembered in moods. For example, happy people can remember more happy information. In the same way, people in good mood can recall good memories easier (Lutz & Huit, 2003).

Levels-of-processing effect theory. Levels-of-processing effect theory states that memories recall is based on the depth of mental processing. It is determined by the connections with pre-existing memory, time spent processing the stimulus, cognitive effort and sensory input mode. Shallow processing such as memory that is based on sound or writing causes a fragile memory trace. It is easy to decay and then forget. While deep processing like memory that is based on semantics leads to more reliably memory trace. It can store for longer periods of time (Lutz & Huit, 2003).

Associative strength theory. Ellis and Hunt (1993) mentioned that a good cue is effective for remembering information and also retrieving memories. Associative strength theory suggests that a cue is effective when that cue has occurred frequently with the event in the past. If the "activation" of the representation of the cue is occurred, then memory is retrieved automatically. Hence, it also means that cue is strongly associated with the event. In 1983, Anderson (as cited in Ellis & Hunt, 1993, p.139) said that "activation" is a transformation of information from long-term memory to short-term memory. For example, meow is frequently occurred with cat, so meow is a good and effective cue to remember cat.
Eyewitness memory

Eyewitness memory is an example of the memory recall that enable eyewitness to think back the event that had happened in the past. However, the reliability of eyewitness testimony has been of concerned. It is important to decide how much to believe eyewitness because there are many real-life cases that have been seen in which eyewitness testimony is inaccurate (Eysenck, 2006). Bohannon (2014) said that many people that are convicted with eyewitness testimony have been exonerated by DNA evidence subsequently. This shows that eyewitness testimony is not accurate entirely. In additional, Bohannon (2014) also shows that 75% of convictions that is based on eyewitness testimony for rape and murder, including a number that led to people being scheduled for execution were actually wrong. Thus, eyewitnesses’ testimony can differ with what had actually happened, even though they believed what they are describing was really happened. When people witness an unexpected event, they may feel distraction and fear. People may not notice the visual differences in the details of a scene. Hence, what they actually get to store in the memory is full of gaps. Our brain will fill in the gaps unconsciously with inferences and deductions that are not very reliable. This phenomenon is known as change blindness. As we are not aware of this, so we concluded and believed that the reconstructed memory is what we actually witness (Wells, 2014).

As a result, every time when retrieving a false memory every time, it strengthens the false memory. In the end, people may confidently believe what they saw, even though it may differ from what had actually happened (Wells, 2014). Multiple-entry modular theory that is suggested by Johnson (as cited in Davies & Logie, 1993, p.371) examines the ability of individuals to differentiate between what they have experienced and what they had been told. Johnson said that people make decision and conclusion about the source of memories based on the characteristics associated with the memory record (Davies & Logie, 1993).