Creating false memories for visual scenes by asking misleading questions

Abstract

Formation of false memories preceding visual scenes leads to falsified testimonies provided by eye witnesses. Creating false memories has become a vital skill to explore processes involved in true memories. The objective of this study is to investigate the effect of misleading questions on memories of visual picture paradigms. It is hypothesized that individuals are likely to create false memories if the questions asked are misleading instead of direct questions. The study will consist of 100 participants from Monash University, Malaysia who are asked to fill a questionnaire followed by an interview session. Half the sample, group A will be asked misleading questions about a picture paradigm shown which did not consist of the things that will be asked but are likely to be present. The other half, control group will be asked of direct questions. The expected results are that group A will have higher false memories than control group which would establish a causal relationship between misleading questions and creation of false memories.

Key words: False memories, misleading questions, eye witnesses, correlation

Introduction

Memories are not documented in the brain but are recreated using information from varied sources. Experiencing misleading information or suggestive influences may change the original memories and may result in the individual recalling events that never occurred. These false memories could be emotional, vivid and of great confidence and are referred to as 'rich false memories' (Loftus & Bernstein, 2005). Memory errors may have serious issues like wrong conviction of the guilty due to false memories of the eye witnesses (Young *et al.,* 2011).

Many studies have studied the effect of misleading questions on memory re-construction (Loftus & Pickrell, 1995). False memories are more often studied in the lab using the misinformation procedure. The strength of this procedure is encoding, misinformation and retrieval of memory which occurs when for example the individual is asked to remember childhood memories or recent political event, asked questions about things that never happened and ask the individual to respond.

In a study conducted by Frenda, Knowles, Saletan, & Loftus (2013), the false memories of fabricated events were studied. Each individual was presented with five true and major political events with a fabricated event. Many participants showed memory distortion and the follow up study supported the theory that events are easily implanted in the memory when they are similar to certain persons' beliefs and attitudes ass attitude-congruent false events cause familiar feelings which would then interfere with source attributions.

If an individual memory has a lack of clarity about origins of memories this may be due to source monitoring confusion. This state could result in different memory illusions and Cryptomnesia, which occurs when a forgotten memory returns without it being recognized as such by the individual, who believes the memory is new and original (Brown & Murphy, 1989).

Loftus and Palmer (1974) tested the effect of leading questions on eye witness testimonies in which Loftus demonstrated any new information perceived by the witness about the crime were likely to be distorted when it is recalled. In their study, he reported participants reported higher or lower speed estimates regards to specific words like 'smashed' used in question.

The objective of this study is to determine the relationship of misleading questions asked about picture paradigms shown to witnesses and the false memories created. It is hypothesized that sample group which would be asked of misleading questions will report higher occurrences of false memories than the control group which would be asked of direct questions.

Methods

Participants

The participants will be chosen from staff and students of Monash University Malaysia. From all the volunteers, the participants will be chosen randomly. Sample will consist of 50 male and 50 female with the age of participants ranging from 18 to 40 years old. From the sample size of 100 individuals, 20 will be local students and staff whereas the rest will be international students and staff to obtain a representative sample of students from different backgrounds, cultures and stress levels. Then, the participants will be equally and randomly assigned to two groups as group A and control group. As all the participants are chosen from the nearest vicinity and are available, the sample of this study is a convenience sample. A consent form will also be signed by the

participant and has all the rights to leave the study if the individual feels discomfort or would not like to continue. All the procedures will be approved by Monash University Human Research Ethics committee.

Design

This study will a randomized, independent measures design. It will be an experimental study which uses survey method to assess results followed by interviewing. The independent variable will be the questions mentioned in the survey by the experimenter. Survey for group A will contain manipulated misleading questions whereas control group will be asked of standard questioning. The dependant variables will be each individual's response to the picture paradigm. The individuals will be interviewed about what they saw in the pictures three days later.

Materials

The participants will be asked to look at a screen which will have a picture paradigm of 20 pictures that changes every 5 minutes and are not supposed to take notes or talk. They will be provided with a questionnaire one hour later followed by an interview session next day.

Procedure

The images will be of a beach scene with certain objects like a ball, anchors, hats, banana boats that are usually seen in a beach removed. One hour after seeing the pictures the questionnaires will be provided. The group A questionnaire to be filled up with a pencil will consist of questions like 'What was the colour of the umbrella?' whereas that of control will be 'was there an umbrella?'. Each survey answer will have four options 'space to write the answer, correct, wrong, there was no such thing in the pictures'. The responses of the participants will be compared between the two groups. These results will be used to assess the dependant variable. The participants will be informed that the interview sessions will be recorded. The participants will be given a research participation form which includes the brief overview of the study and objective as to study the effect of how watching a video changes communication skills of an individual. This allows the participants to be questioned regularly for a period of time without the individual to avoid participation bias, which occurs when the participants try to please the experimenter by reflecting the results expected. Immediately after the experiment finishes, the participants will be notified of the real aims of the study.

Results

The participants are expected to fill in the questionnaires after looking at pictures and is predicted that responses will vary to the questions that will be asked the next day. Participants of Group A are expected to provide more false responses than control group which would support the hypothesis that misleading questing result in changes in memories of individuals. The initial questionnaire results and the responses during interviews will be compared and evaluated. It is expected of group A to have most variations in initial and final responses. The wrong responses of each group will be added up and the mean correct and incorrect responses of both the groups will be compared.

Discussion

This study aims to investigate the effect of misleading questions have on eye witnessed memories of picture paradigms. The questions asked from group A, as mentioned before 'what was the colour of the umbrella' indicates the presence of the umbrella in the study so the subject comprehends it as there was a umbrella in the study and tries to remember the colour. The control group question would be 'was there an umbrella in the beach' which is more direct and does not give the participant any idea of it was actually present in the beach. Hence, it is hypothesized that individuals in group A would respond about more false memories than control group A due to the misleading questions asked.

A similar study conducted by Miller and Gazzaniga (1998) created a picture paradigm with false recognition of items that did not occur and true recognition of items which occurred. An auditory recognition test was used to determine the relationship. They demonstrated that word and pictures paradigms are successful in creating false memories due to higher chances of false recognition for critical lures like words and pictures which were not shown but closely relate to the words presented. It showed that influence of inferences and perspectives highly affect retrieval of an event.

On the contrary the study by Brainerd & Reyna (2002) showed that children posses the ability to suppress memory reports of false but consistent events. This shows children use a specific editing operation called recollection rejection which represses false reports by accessing precise

traces of true events. The study indicated false-memory editing increases dramatically between early and middle child hood. It also showed that developmental reductions in reporting false-memories are due to developmental improvements in verbatim memory ability instead of reduction of false memory formation and vice versa.

The study that will be conducted has several limitations. The study is conducted in a lab or a room and hence generalizing the results to real life situations where issues at work, stressful situations, sickness, sleep deprivation has an effect of interpreting results (Welson & Olson, 2003). Moreover this study is an independent measures design, which causes error in results due to individual difference of participants and therefore internal validity and reliability will be affected. Future research on this area should also include checking participants for eye sight and eye disorders, neurological disorders, amount of sleep obtained before administering the participants to the study. Future research should be conducted on how things are perceived by handicapped individuals and normal individuals to determine if accidents and mentality have an effect on perceiving visual scenes. Future studies should be carried out on whether people with false memories of impossible events could be reverted back to original memories by asking misleading questions which may also help treat depression by giving the people happy memories rather than the sad, helpless feelings.

References

Brainerd, C., & Reyna, V. (2002). Recollection rejection: how children edit their false memories. *Developmental Psychology*, *38*(1), 156.

Brainerd, C., & Reyna, V. (2002). Recollection rejection: how children edit their false memories. *Developmental Psychology*, *38*(1), 156.

Brown, A., & Murphy, D. (1989). Cryptomnesia: Delineating inadvertent plagiarism. *Journal Of Experimental Psychology: Learning, Memory, And Cognition*, *15*(3), 432.

Frenda, S., Knowles, E., Saletan, W., & Loftus, E. (2013). False memories of fabricated political

events. *Journal Of Experimental Social Psychology*, *49*(2), 280--286.

Loftus, E., & Bernstein, D. (2005). Rich false memories: The royal road to success. *Experimental Cognitive Psychology And Its Applications*, 101--113.

Loftus, E., & Pickrell, J. (1995). The formation of false memories. *Psychiatric Annals*, *25*(12), 720--725.

Loftus, E., & Palmer, J. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal Of Verbal Learning And Verbal Behavior*, *13*(5), 585--589.

Miller, M., & Gazzaniga, M. (1998). Creating false memories for visual scenes. *Neuropsychologia*, *36*(6), 513--520.

Wells, G., & Olson, E. (2003). Eyewitness testimony. *Annual Review Of Psychology*, *54*(1), 277--295.

Young, A., & others,. (2012). Convicting the innocent: where criminal prosecutions go wrong, by Brandon L. Garrett 1. *Osgoode Hall LJ*, *50*, 491--737.