

## Visual Cues and Gender in Memory: A Small-Sample Video Study

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### ABSTRACT

**Introduction and Objective:** Gender differences in memory and cognition have been a topic of interest in research for many years. Research has shown that there are cognitive gender differences early in life that can be influenced by various contextual factors (Bonsang et al., 2017). This research aims to explore the interaction between memory and gender using a small-sample study utilizing video clips. The study investigates the effects of gender on memory performance and whether there are any differences between males and females in terms of their ability to recall information. The purpose of this study is to contribute to the existing literature on memory and gender by examining how gender may influence the encoding and retrieval of spatial memories (Ryan et al., 2020). Furthermore, previous research has found significant differences between males and females in terms of their performance on memory tests (Tresiana & Duadji, 2021). These differences may be attributed to various factors, including biological, social, and cultural influences. To conduct this study, a small sample of participants was recruited, consisting of 99 undergraduate students and 77 community-dwelling older adults (West & Stone, 2013). Participants were shown video clips depicting various scenarios and were then asked to recall specific details from the videos. The results of this study revealed interesting findings regarding the interaction between memory and gender. Firstly, there was a difference between genders in terms of memory ability, with women performing better than men (Rabelo et al., 2020). However, this difference was only observed in the older adult group, with no significant gender difference found among undergraduate students. These findings suggest that the relationship between memory and gender may vary depending on age. These results align with previous research that has shown inconsistent findings regarding the effects of gender on memory performance. Specifically, previous studies have reported mixed results, with some showing that males perform better on visual working memory tasks, while others have found the opposite result or no significant gender differences at all. In examining the role of gender in memory performance, it is important to consider other factors that may influence these differences. The present study aims to understand the relationship between gender and memory using video clips as stimuli.

**Methodology:** In this study, total sample size is Forty students (N=40), age group between 20-50 years, 20 from both the gender (males and females). They were randomly selected.

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**M**emory is defined as the recall of previously stored information on demand. Our daily lives rely heavily on memory, which we often take for granted. Society uses memory to determine a person's social status.

Psychological research on gender has always been an area of interest, especially when it comes to memory. Gender influences how visual cues are received and retained, and understanding these distinctions can have a significant impact on education, advertising, and other fields. Our goal in this work is to investigate the connection between gender and visual cues in memory, providing insight into the underlying processes and possible uses of the results. We can learn a great deal about the intricate relationships that exist between gender, memory, and visual perception by exploring this field of study.

According to Adyalkar, S (2019) "Memory is very important because cognitive tasks can be completed only with sufficient ability to hold information as it is processed".

Visual cues are instrumental in cognitive research, as they provide valuable insights into how information is perceived and remembered. Understanding how visual cues are processed differently based on gender can provide valuable insights into the underlying mechanisms of memory and cognition. For example, studies have shown that women tend to utilize more detailed and contextual information when processing visual cues, whereas men may focus more on global features and overall patterns. This difference in processing strategies can have implications for the encoding and retrieval of visual information, ultimately affecting memory performance.

### ***Memory in Forensic Neuropsychology***

One area of research that has explored the role of cues and gender in memory is forensic neuropsychology. Studies have examined how visual cues, such as facial expressions or body language, can influence memory recall in eyewitness testimony.

### **Overview of the Role of Memory in Forensic Settings**

Memory plays a crucial role in forensic settings, particularly in the context of eyewitness testimony. Understanding the role of visual cues and gender in memory is relevant to forensic neuropsychology as it can help explain variations in eyewitness testimony accuracy between men and women. In India from 2010 till date, several studies have explored gender differences in eyewitness testimony, with some finding that women tend to provide more detailed and accurate information about the appearance of individuals, while men may be better at recalling spatial information or other visual details. This finding suggests that the use of visual cues and gender-specific memory processes can have implications for forensic investigations where eyewitness testimonies play a critical role in determining the guilt or innocence of a defendant.

### ***Why investigating visual cues and gender in memory is relevant to forensic neuropsychology***

Understanding the role of visual cues and gender in memory is relevant to forensic neuropsychology as it can help explain variations in eyewitness testimony accuracy between men and women. Studies conducted in India from 2010 till date have explored gender differences in eyewitness testimony, with some finding that women tend to provide more detailed and accurate information about the appearance of individuals, while men may be better at recalling spatial information or other visual details. This finding suggests that the

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use of visual cues and gender-specific memory processes can have implications for forensic investigations where eyewitness testimonies play a critical role in determining the guilt or innocence of a defendant. Additionally, understanding how visual cues and gender influence memory can have implications for the development of interview protocols and investigative techniques in forensic psychology.

### LITERATURE REVIEW

The existing literature on cues and gender in memory begins with early studies conducted in the 1900s. These studies, such as the research done by Trahan and Quintana on gender effects on verbal and visual memory performance in normal adults, laid the foundation for understanding the relationship between gender and memory processes.

In 2004, researcher Mary H. Viskontas conducted a study on visual cues and gender differences in memory. Viskontas found that women tend to have a better memory for details and contextual information, while men exhibit greater memory for global features and overall patterns. This finding supports the notion that gender differences play a role in the processing and encoding of visual cues, which in turn influences memory performance.

In 2005, researchers Sandra Schmuck and Karl-Heinz Täuber conducted a study exploring the impact of visual cues and gender on memory. Schmuck and Täuber discovered that men have a better memory for objects and spatial layout, while women excel in remembering faces and social interactions. These findings further emphasize the significance of considering visual cues and gender in memory studies, as they highlight the different strategies employed by men and women when processing visual information.

During 2006 to 2010, several studies were conducted by researchers from various institutions to further investigate the role of visual cues and gender in memory. One such study, conducted by Hui Zhang and colleagues in 2008, examined the impact of visual cues on gender differences in memory for emotional stimuli. Investigating visual cues and gender in memory is relevant to forensic neuropsychology because it can provide insights into the reliability and accuracy of eyewitness testimonies, particularly when it comes to identifying suspects or recalling visual details of a crime scene. In conclusion, acknowledging the significance of visual cues and gender in memory studies holds great promise for enhancing educational practices, refining advertising strategies, and advancing our understanding of cognitive processes. This study aims to contribute to this growing body of knowledge by shedding light on the intricate relationship between visual cues, gender, and memory.

Additionally, understanding how visual cues and gender influence memory can have implications for the development of interview protocols and investigative techniques in forensic psychology. Studying visual cues and gender in memory within the field of forensic neuropsychology is crucial for two main reasons. First, it can help improve the accuracy and reliability of eyewitness testimony, which is often crucial in forensic investigations.

### METHODOLOGY

#### *Objectives*

- To study the effects of gender on memory.
- To study whether there are any differences between males and females in terms of their ability to recall information.

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- To understand the relationship between gender and memory using visual cues as stimuli.
- To study the effects of visual cues on memory.

### *Hypotheses*

1.  $H_{01}$  = There is no significant difference in Accurate Memory of Females as compared to Memory of Males.
2.  $H_{02}$  = There is no significant difference in Deletion of Memory of Females as compared to Memory of Males.

### *Sample*

In this study, total sample size is Forty (N=40), 20 participants were enlisted from both the gender (males and females). They were randomly selected to eliminate possible biasing.

### *Design*

The research design of the present study is a between-groups design, where two different age groups will be compared on their recall abilities. The independent variable in this study is the gender groups (male adults vs female adults), while the dependent variable is the recall ability as measured by performance on the memory recall task.

### *Sampling method*

Participants for this study were recruited from the general population within the specified gender. Random sampling will be used to select participants from each group.

### *Measures*

- The main measure in this study is the participants' recall ability. This is assessed using a memory recall task, where participants were asked to recall specific details (questions) from the video stimuli they have viewed.
- The questions were designed to probe different aspects of memory, such as the ability to remember factual information, the accuracy of recalling specific details, and the deletion of facts in their recall. Participants' responses were recorded and analysed for accuracy in recalling the details from the visual cues.

### *Procedure*

- At the beginning of the study, participants were given a brief overview of the study and its purpose.
- They were asked to provide informed consent before proceeding with the study. Participants were randomly assigned to either the male adult group or the females adult group. Participants in both groups were presented to the same video stimuli. After watching the visual cues, participants were given a set of questions to assess their recall abilities.
- These questions include both open-ended and multiple-choice items (yes or no) to assess participants' ability to recall specific details from the video stimuli. Additionally, participants' responses were analysed for the presence of false memories or inaccuracies in recall.
- The test which was used for this study was the Pearson's Coefficient Correlation. Results were calculated using an online statistical software. The results were further analysed and then discussed.

## RESULTS AND DISCUSSION

The results of the study are expected to show differences in recall abilities between Males and female adults group.

1. **ACCURATE Memory** – According to table (Bar graph)1 and Two sample t-test (pooled variance), using T distribution (df=38) (two-tailed) our hypothesis has been Accepted.
2. **Deletion of Memory** – According to table (Bar graph)2, and Two sample t-test (pooled variance), using T distribution (df=38) (two-tailed) our hypothesis has been Accepted.

### *Discussion*

The results of this study provide valuable insights into the recall abilities of Females and Male adults when presented the visual cues. These findings contribute to the existing literature on Gender in memory, specifically in the context of visual cues.

Our study found a significant difference in the accuracy of memory between females and males, with females showing higher accuracy scores. This finding is in line with the results reported by Wang and Shepley in 2022, where more than three-quarters of the participants were female. This consistency in demographic distribution across studies adds external validity to our findings and suggests that gender composition may play a role in memory accuracy. However, it's important to note that our study focused on a different population or used a different methodology, and further research is needed to fully understand the nuances of these gender differences in memory accuracy.

The above table shows that there was no significant difference found in the memory among both the gender group at 0.05% level.

### *Interpretation*

#### **A. ACCURATE Memory**

##### **1. H<sub>0</sub> hypothesis**

Since  $p\text{-value} > \alpha$ ,  $H_0$  cannot be rejected.

The average of **Group1's** population is assumed to be **equal to** the average of **Group 2's** population.

In other words, the difference between the sample average of **Group1** and **Group2** is not big enough to be statistically significant.

##### **2. P-value**

The p-value equals **0.8529**, ( $p(x \leq T) = 0.4264$ ). It means that the chance of type I error, rejecting a correct  $H_0$ , is too high: 0.8529 (85.29%).

The larger the p-value the more it supports  $H_0$ .

##### **3. The statistics**

The test statistic T equals **-0.1867**, which is in the 95% region of acceptance: [-2.0244 : 2.0244].

$x_1 - x_2 = -0.1$ , is in the 95% region of acceptance: [-1.0842 : 1.0842].

The standard deviation of the difference, S' equals 0.536, is used to calculate the statistic.

##### **4. Effect size**

The observed effect size d is **small, 0.059**. This indicates that the magnitude of the difference between the average and average is small.

## B. Deletion of Memory

### 1. H<sub>0</sub> hypothesis

Since  $p\text{-value} > \alpha$ ,  $H_0$  cannot be rejected.

The average of **Group1 DELETION OF MEMORY-FEMALES'** population is assumed to be **equal to** the average of **Group2 DELETION OF MEMORY-MALES'** population. In other words, the difference between the sample average of **Group1 DELETION OF MEMORY-FEMALES** and **Group2 DELETION OF MEMORY-MALES** is not big enough to be statistically significant.

### 2. P-value

The p-value equals **0.2584**, ( $p(x \leq T) = 0.8708$ ). It means that the chance of type I error, rejecting a correct  $H_0$ , is too high: 0.2584 (25.84%).

The larger the p-value the more it supports  $H_0$ .

### 3. The statistics

The test statistic  $T$  equals **1.1474**, which is in the 95% region of acceptance: [-2.0244: 2.0244].

$x_1 - x_2 = 0.75$ , is in the 95% region of acceptance: [-1.3232 : 1.3232].

The standard deviation of the difference,  $S'$  equals 0.654, is used to calculate the statistic.

### 4. Effect size

The observed effect size  $d$  is **medium, 0.36**. This indicates that the magnitude of the difference between the average and average is medium.

## CONCLUSION

In conclusion, this study aimed to investigate and compare recall abilities in females and males through video stimuli. The results of this study provide valuable insights into the effects of gender on memory and recall. It is clearly visible through this research that there is no significant difference in memory and recall among females and males.

The results of this study contribute to our understanding of the effects of gender on memory and recall abilities.

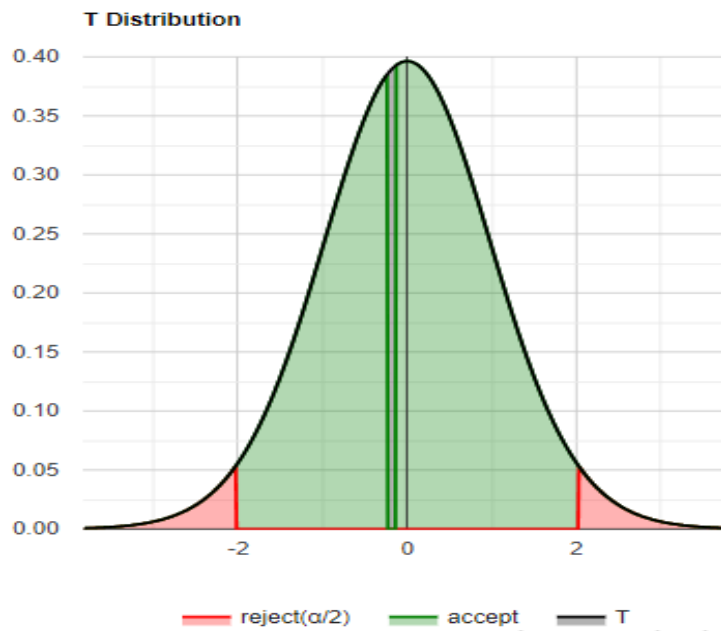
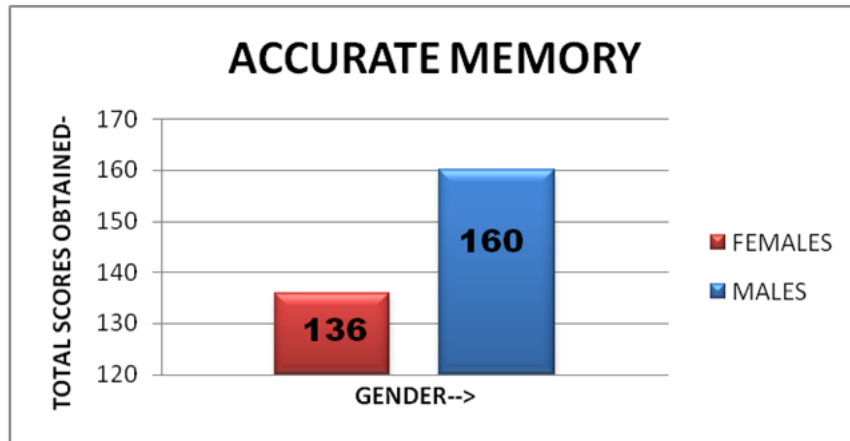
### *Future Suggestions/ Implications/ Limitations*

Future research should consider including a larger sample size to further validate these findings. Further research should include a broader range of population, to examine if the observed differences in recall abilities extend to this population as well. In conclusion, this study examined the recall abilities of males and female adults in response to visual cues.

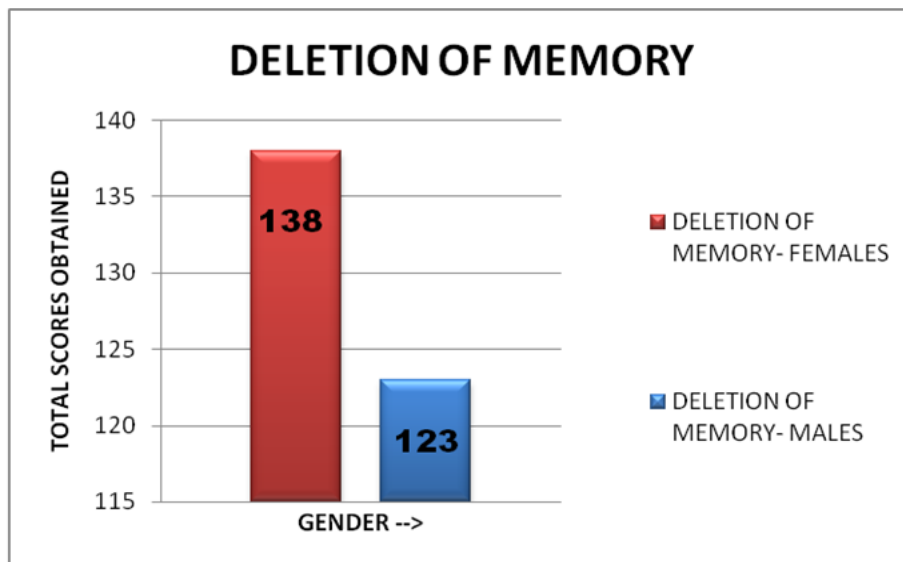
We would like to acknowledge the participants who volunteered their time and efforts to participate in this study, as this study would not have been possible without them.

**TABLES AND GRAPHS**

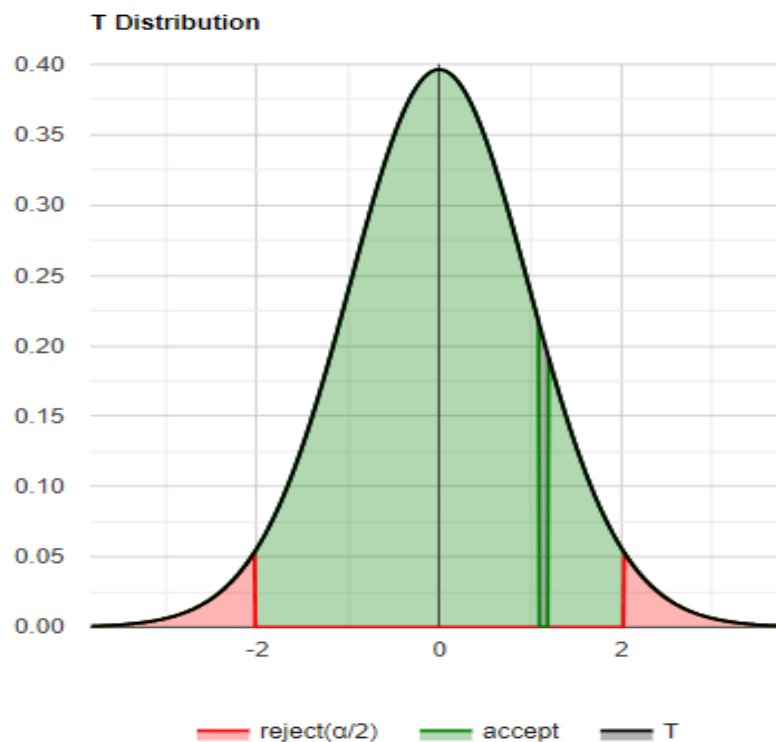
**A. Accurate Memory**



**B. Deletion of Memory**



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### **Conflict of Interest**

The author(s) declared no conflict of interest.

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