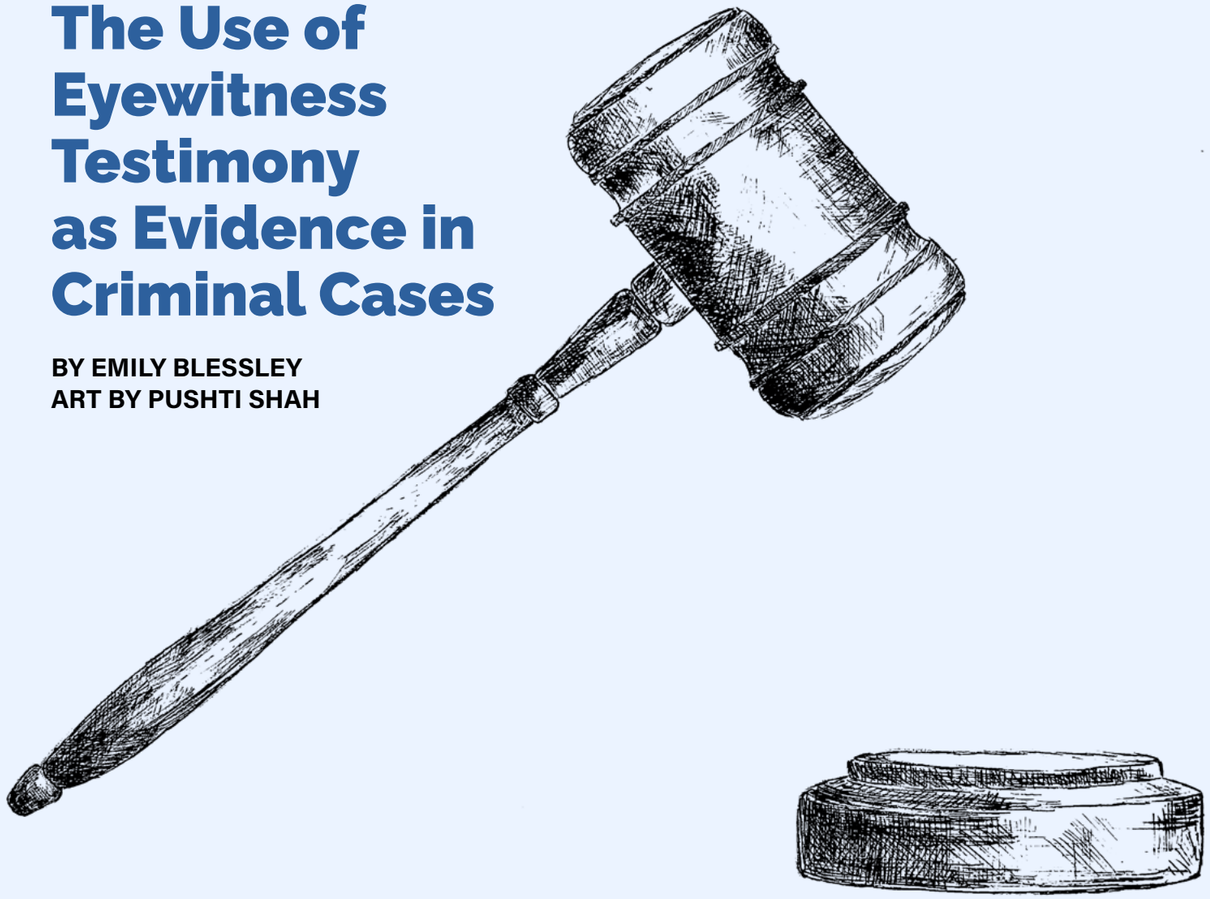
The Use of Eyewitness Testimony as Evidence in Criminal Cases

BY EMILY BLESSLEY
ART BY PUSHTI SHAH



General Editor: Margaret Silva
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Eyewitness testimony in court is shown to highly sway the opinion of jurors. Jurors trust a confident eyewitness and believe they are telling the truth and that their testimony is accurate [1]. Therefore, it is important that the individuals allowed to testify are accurate in their recollections. The enhanced ability to extract and examine DNA and the widespread usage of DNA as evidence in recent years has exonerated innocent individuals convicted of crimes that occurred before forensic DNA evidence was well understood. Out of those exonerated by DNA evidence, 75% were sentenced based on faulty eyewitness testimony [2]. Stress conditions significantly impact how memories are stored and how well they can later be recalled [3]. Therefore, the investigator questioning style must take stress levels and type of event witnessed into consideration. This has the potential to inform eye witness interviewing techniques and thereby improve the reliability of testimony, ultimately reducing the number of wrongful convictions.

MEMORY FORMATION

Immediately after witnessing a crime, the scene is stored as a short-term memory. Both short-term and long-term memories arise from communications of neurons, the nerve cells of the brain. The first neuron communicates with the second neuron using its reaching dendrites. A short-term memory is a brief instance of strengthening the synapse, the pathway where electrical signals are passed from one neuron to another [4]. A common example of short-term memory is meeting a new person, remembering their name throughout the conversation, but not remembering their name the next time you see them. This dilemma is caused by a lack of reinforcement in the brain to move the name from short-term memory to long-term memory.

While we are in a lecture, new information enters the short-term memory and when this information is reinforced it enters the long-term memory, which can be recalled at a later time. This process of converting short-term memories into long-term memories is known as consolidation [4]. The question remains, how does the brain know what information should be moved to the long-term memory and what information we can forget?

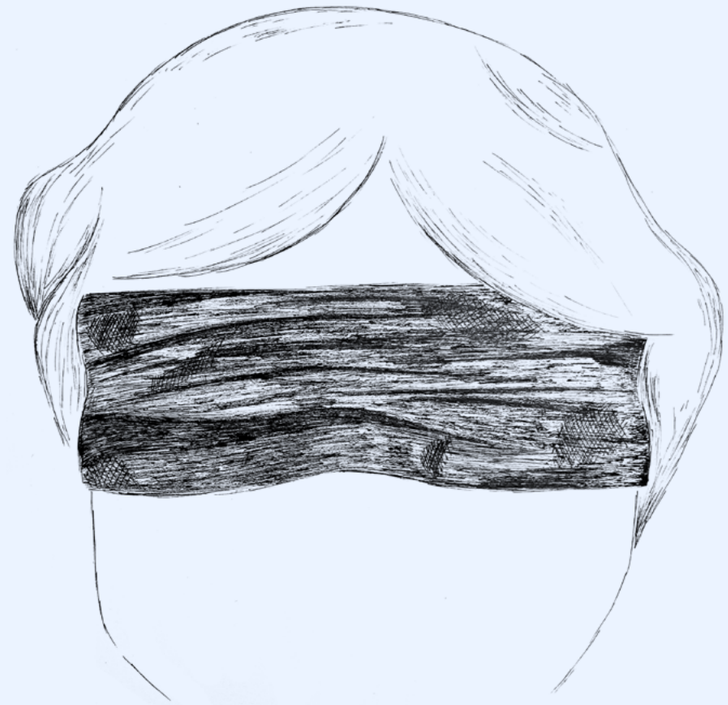
The answer lies within our brain's anatomy. Repeated firing of the synaptic region triggers an action potential [4]. An action potential is a method of activation from one cell to the following cell through the synapse [4]. During an action potential, calcium channels along the cell membrane open, allowing calcium ions to enter the cell and activate the transcription factor CREB [4]. CREB is a protein that activates gene transcription in the nucleus of a neuron. It activates specific genes that create proteins whose role is to strengthen the synapse. The neurons pass through the hippocampus with the memories ultimately being stored in the cerebral cortex [4]. The hippocampus is a C-shaped structure that is relatively central in the brain. The cerebral cortex lies closer to the skull and serves a variety of purposes, including memory storage. This raises a potential difficulty in recalling traumatic memories, such as witnessing a crime, because it cannot be viewed more than once, making repeated activation and strengthening of the synapse more challenging [4].

THE IMPORTANCE OF RELIABLE EYEWITNESS TESTIMONY

Memory formation during stressful moments is dependent on numerous factors. The nature of the crime determines the level of emotional distress. The Yerkes-Dodson law suggests that there is an optimal level of arousal or stress for memory efficiency [3]. Alertness is low at both too high and too low arousal or stress [3]. Witnessing a crime can be incredibly stressful, resulting in highly emotional reactions with low memory efficiency [3].

Previous research shows that memories associated with intense feelings tend to be more accessible than memories associated with less intense emotions. This suggests that because the body is in a high stage of emotional disturbance when witnessing a violent crime, the body is able to store memories that can be easily accessed. With easily accessible memories free recall style questions can be used. Free recall is traditionally viewed as higher quality evidence because the information is offered by the witness without investigator influence. Free recall style questioning can be thought of as a more open-ended style of questioning, including questions like "Can you describe what you witnessed on a given date?" [5]. Prompting style questioning is used when investigators guide the witness to discuss a particular portion of the crime that is of interest to them [5]. During free recall style questioning, witnesses to non-violent and mildly intense crimes take longer to recall memories [5]. Differences in accuracy are not present between prompting style questioning and free recall style questioning, indicating the significant difference between intense and mildly intense feelings is the accessibility of memories [5]. High emotional distress is associated with relatively inaccurate peripheral details, but readily accessible central details [3]. A witness may be able to recall the specific memory (central details), but might not be able to demonstrate a clear picture with all details (peripheral details). An intermediate level of arousal would result in more accurate peripheral details that are less accessible. Intermediate arousal could be caused by witnessing a crime that doesn't evoke a strong emotional response. The witness will require significantly more prompting, questioning, and may even not be recalled until numerous questioning sessions occur [3].

One potential solution to filling in these gaps in peripheral details is using hypnotically enhanced recollections. In an experiment conducted by Geiselman and colleagues, participants were shown video footage of a robbery, then were either



questioned or had their recollections hypnotically enhanced followed by questioning. The hypnotically enhanced individuals recalled significantly more critical details than the group that was questioned without going under hypnosis. The hypnosis treatment enhanced memory retrieval, allowing investigators to ask less questions and question for a shorter duration, while increasing the accuracy of the recollection [6].

CONCLUSION

In summary, research suggests that witnesses of less intense crimes require more prompts during questioning and questions based on recalled information. Witnesses of high intensity crimes can be expected to provide all relevant details to be used as evidence in criminal trials. Individuals with gaps in peripheral details should still be considered to provide usable testimony given they demonstrate thorough recollection of the major details. Lastly, using hypnosis to enhance recollection, when conducted in an unbiased manner, enhances accuracy of recollection. Investigators and hypnosis providers should be well-trained and regulated to ensure questioning style and hypnosis enhance recollection ability. Ensuring quality and validity of eyewitness testimony is critical to avoid wrongful convictions.

SOCIAL MEDIA & BODY DYSMORPHIC DISORDER

General Editor: Rose McGrath
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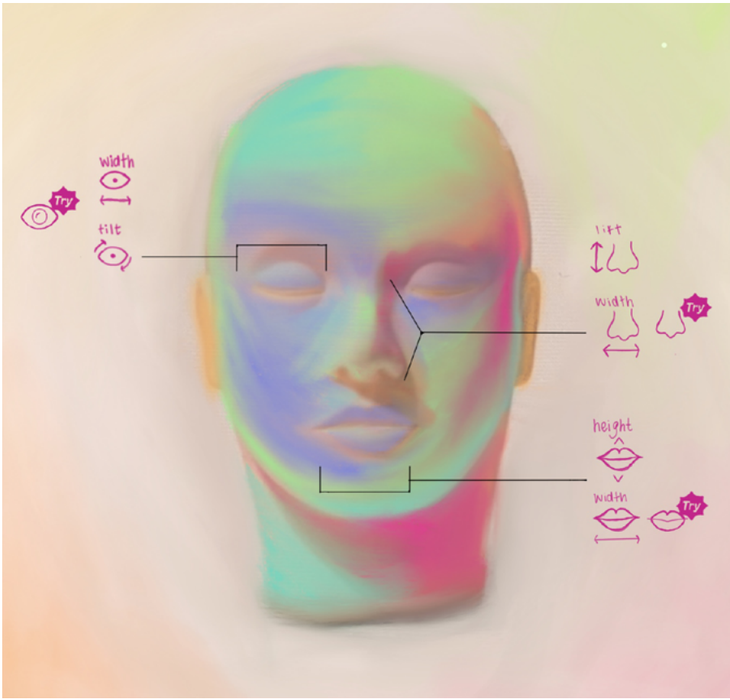
BY AMBER PUTMAN
ART BY DANNI SIGLER

The prevalence of social media in today's society has increased greatly over the past ten years, especially amongst adolescents who are growing up with the internet and media influencing how they view themselves and the world around them. Social media's uprise has not only influenced society but also mental health. This influence can be more detrimental at a young age because the adolescent brain is still developing. It is also at this time where symptoms of mental illness, such as Body Dysmorphic Disorder (BDD), can begin to develop [1]. It is important to notice the effects media has on adolescents' mental health during this developmental moment in their lives. This increased presence of social media could potentially increase the severity of Body Dysmorphic Disorder symptoms.



WHAT IS BODY DYSMORPHIC DISORDER?

When most people hear the term 'body dysmorphia' they often associate it with an eating disorder; however, these are two separate illnesses. Body Dysmorphic Disorder (BDD) is classified as an anxiety disorder in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), which serves as a guide to diagnosing mental disorders. More specifically, BDD is classified as an obsessive-compulsive disorder due to the obsessive and uncontrollable intrusive thoughts individuals experience, and the different rituals used to relieve the anxiety [2]. BDD usually starts to develop in adolescent life, starting as early as age 12, with an average age of 16-17 years old [1]. Individuals diagnosed with BDD account for 2.4% of the population, making this disorder more common than the eating disorder Anorexia Nervosa (AN) [3]. However, as opposed to AN, which is characterized by anxiety surrounding one's body weight, BDD involves anxieties over non-weight appearance concerns. Although most often these flaws are imaginary or not observed by others, the individual can become very distressed with their obsessive thoughts. This causes interference in their everyday life due to their constant attempt to hide their perceived flaws [4].

BDD is much more than having a negative body image. What sets BDD apart from simply having low self-esteem is the obsessive thoughts and compulsive behaviors that come with the disorder. One example of these OCD tendencies is mirror checking. An individual with BDD might have a ritual of checking themselves in the mirror more than a hundred times during the day, reinforcing more negative feelings about their body image [2].

However, this does not mean that self-esteem cannot influence BDD symptoms. A compilation of studies from Kuck and colleagues of the Department of Psychology at the University of

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