Factors Affecting the Accuracy of Eyewitness Identification

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Abstract
In lieu of an abstract, below is the article's first paragraph.

We've all experienced, at one time or another, our own memories failing us at times, and this may have been due to a number of factors. Perhaps the issue at hand was not important to us at the time, and therefore we devoted little attention to it. But imagine being in the scenario Wells (1993) suggests in the following passage:

Suppose that you were an eyewitness to a crime. Perhaps it was a theft, a burglary, a mugging, a drive-by shooting, or a robbery. You might or might not have known that a crime was being committed at the time; perhaps you saw someone exit a building that exploded a short time later. Perhaps you were the victim or perhaps you were a bystander. Regardless of the circumstances, there exists some memory trace, however strong or weak, that could have important consequences for the course of justice. Because you have seen the culprit, the police ask you to give a description. Later, perhaps only hours or perhaps months later, you are called to the police station to attempt an identification of the culprit. You are then shown a lineup or a photo spread and asked to indicate whether the person you saw on that fateful occasion is one of the people standing or pictured before you on this day. (p. 553)

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Factors Affecting the Accuracy of Eyewitness Identification
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Eyewitness testimony, most often serving as direct evidence in court, commonly proves to be a strong influence on juries (MacLin, et al., 2001). Unfortunately, a series of recent DNA exoneration cases shows evidence of the flaws in eyewitness identification, and how it may lead to the conviction of innocent people (MacLin, et al., 2001). MacLin and colleagues (2001), in a study of face recognition, cited four specific factors that influence an eyewitness’s viewing conditions. These include: exposure time (the extent of time a person has to view the face), delay (amount of time between initial presentation of a stimulus and subsequent recognition), attention and arousal (the concentration of mental effort), and weapon focus (the presence of a weapon).

In addition to these factors, Searcy and colleagues (1999) studied how age affects accuracy in face recognition. Their studies of aging and face recognition show a positive correlation between age (beginning at age 18) and false identification of new faces.

Wells (1993) argues that the degree of certainty with which a false identification is made is a greater factor in the miscarriage of justice than the misidentification itself. He claims that the more similarities that exist between the witness’s memory trace of the perpetrator and the identified person, the greater the degree of certainty that will be expressed in the identification. The more certainty an eyewitness expresses, the more likely they are to be seen by a jury as a credible witness. Chambers (2001) looks at suggestive questioning and biases in lineups as factors in misidentification. She reviews the possibility and result of misleading questions, and biased lineups and/or photo spreads. Finally, Shaw and Skolnick (1994), and Wright, Boyd, and Tredoux (2001) studied sex differences and the own-race biases, respectively, in face identification. The own-race bias, or cross-race effect, states that faces of one’s own race are more easily identified than faces of another, less familiar race (Meissner, et al., 2001). These nine factors (exposure time, delay, attention and arousal, weapon focus, age, degree of certainty, suggestive questioning and biased lineups, sex differences, and own-race bias) are of the most prominent factors, both internal (psychological and/or biological) and external (environmental), which affect face recognition and identification. All the above-mentioned factors affecting eyewitness identification will now be further explored.

Viewing Conditions
There are four factors stated in MacLin and colleagues’ 2001 study, which involve viewing conditions in the recognition of a face. These are: exposure time, delay, attention and arousal, and weapon focus.

The length of time a witness has to observe a face affects their subsequent capacity to recognize that face (MacLin, et al., 2001). This is most commonly referred to as exposure, or study time. In a study conducted by Reynolds & Pezdek (1992 as cited in MacLin, et al., 2001), researchers had subjects view slides with different versions of faces for either twenty seconds or three seconds. As would be expected, they found that the longer the subjects had to view the face, the better their performance on subsequent recognition tasks. In relation to this, a 1979 study by Light, Kayra-Stuart, and Hollander (as cited in MacLin, et al., 2001; Sporer, et al., 1996) found that the difference in exposure time improved memory of unusual faces (highly attractive and highly unattractive) but had no influence on typical, neutrally rated faces. Note that in this study, participants viewed...
the faces for twenty seconds and eight seconds (compared to twenty seconds and three seconds in the previous study). In the Shapiro and Penrod meta-analysis (as cited in Sporer, et al., 1996) facial distinctiveness was a strong indicator of recognition accuracy rates, in both correct and incorrect identifications.

Just as an increase in viewing time increased recognition rates, decreased viewing time lowered recognition rates due to an increase in false identifications (MacLin, et al., 2001). In reality, in actual eyewitness situations, suspects are seen for varying lengths of time, depending on the situation. It is important, when relying on the testimony of an eyewitness, to understand how varying exposure times can have an influence on the accuracy of identification, and pose the possible risk of false identification.

Accuracy rates are also influenced by time delay—the amount of time that passes between seeing the culprit and identifying him/her. Barkowitz and Brigham (1982) worked with White and African-American undergraduates to gauge their ability in correct identification of previously viewed faces of both races. The intervals of time delay varied between immediate, two days, and seven days. They found that recognition accuracy of faces decreased after long intervals. The longer the delay between presentation of the stimulus and subsequent recognition, the greater the chances of false identification. Studies have also found this to be true in cross-race identifications (MacLin, et al., 2001). Thus, race has no influence on the accuracy of identification when dealing with the time delay factor. It comes down to the simple fact that the longer one has gone without seeing a face, the harder it is to remember that face. On one final note, long intervals in delay have been shown to have very little effect on recognizing faces of acquaintances (MacLin, et al., 2001).

Two factors not extensively studied but critical nonetheless to the reduction of optimal viewing conditions are attention and arousal. The concentration of mental effort (attention), and the general drive to exert mental effort and maintain perception (arousal) vary significantly in each eyewitness situation (MacLin, et al., 2001). Studying these factors is essential in determining the levels of arousal and attention that are optimal and damaging to the process of face recognition. Many studies have found a negative correlation between arousal and accurate face recall (MacLin, et al., 2001). To better understand this, take for example Peters’ study (1988 as cited in MacLin, et al., 2001). Participants were brought in to receive an immunization shot given by a nurse who also took the participant’s pulse once again. The pulse rates were higher when taken by the nurse, indicating higher levels of arousal (probably due to anxiety of the needle), and lower when taken by the nurse’s aid—after they had some time to calm down. The participants returned days later for a follow up exam and were asked to recall specific details about the faces of both the nurse and the nurse’s aid, and to identify the two from a photo spread. The results were as follows: the face of the nurse’s aid was more frequently identified and more accurately recalled than that of the nurse. This study shows that higher levels of arousal contribute to lower levels of accurate recognition. This fact can be taken into account when assessing the credibility of an eyewitness. What the state of arousal was and how the witness reacted to the situation will influence the precision of their memory.

Attention and arousal have also been found to be responsible for another factor affecting eyewitness identification: weapon focus. This phenomenon is exactly what it says—if, during the commission of the crime, the victim or witness sees a weapon present, the focus of attention automatically diverts to the weapon, and away from the face of the culprit (MacLin, et al., 2001). The presence of a weapon also increases arousal, which, as shown previously, decreases the accuracy of face identification. In addition to this, the interaction between attention and arousal may cause the witness to narrow additional focus, producing cue utilization (MacLin, et al., 2001). This hypothesis is based on the premise that in order to perform a task we must use external cues. The more multifaceted the task, the more cues that need to be attended to. As arousal increases due to weapon focus, performance decreases, thus reducing the scope of cues monitored. This results in peripheral cues, in this case the face, going ignored (MacLin, et al., 2001).

MacLin and colleagues (2001) identified and examined four important factors of face recognition and viewing conditions. These factors, separately and combined, affect the accuracy of eyewitness identification. It is crucial to be aware of these in order to knowledgeably assess the credibility of an eyewitness. If these conditions were present, it may have caused the eyewitness to unknowingly make a false identification.

Internal Factors

Internal factors of influence in face recognition refer to the biological and psychological aspects, over which we have little to no control. Age, sex, and the own-race bias can all be considered internal factors.

Across a number of studies on age and recall, there seems to be a common pattern that runs through all. The ability to recognize unfamiliar faces increases
steadily from childhood through adolescence, peaking between the ages of 14 and 17, and then slowly declining, dropping off sharply after age 50 (Cutler & Penrod, 1995). Older adults perform more poorly in differentiating a previously viewed stranger’s face from an entirely new face (Searcy, et al., 1999). This can have important implications in the use of lineups and the treatment of elderly eyewitnesses, thus it is important to examine age-related discrepancies in identification.

In their 1984 study, Chance and Goldstein (as cited in Cutler & Penrod, 1995) found that kindergarteners’ percent of accuracy in identifying a face fell between 35 and 40%; 6 to 8-year olds fell between 50 and 58%; 9 to 11-year-olds fell between 60 and 70%, and by age 12 to 14 the percent of correct identifications fell between 70 and 80%. However, Parker, Haverfield, and Baker-Thomas (1986 as cited in Cutler & Penrod, 1995) conducted their study on elementary school children, with an average age of eight years old, and compared them to college students. When asked to identify the culprit of a simulated crime, “the two groups did not differ with respect to identification accuracy, but the elementary school subjects were more likely to change their lineup choices” (Cutler & Penrod, 1995, p. 82).

Similarly, O’Rourke and colleagues (1989 as cited in Cutler & Penrod, 1995) gathered college students and community members ranging between the ages of 18 and 72, and showed a videotape reenactment of a robbery. The researchers had the subjects identify the culprit from robber-present and robber-absent lineups. The percentages of correct identifications were as follows: 51% for the 18 to 19-year-olds; 47% for 20-29; 46% for 30-39; 42% for 40-49; 29% for 50-59; and 60 to 72-year-olds correctly identified the culprit only 25% of the time (Cutler & Penrod, 1995). These studies and many others show developmental trends in the accuracy of facial identity.

Similar to the well-known own-race bias (which will be discussed later) is the own-sex bias. The own-sex bias, the belief that humans can more easily recall a face of their own sex than that of the opposite sex, could explain the differences among men and women in eyewitness reliability (Shaw & Skolnick, 1994). The Shapiro and Penrod meta-analysis (Cutler & Penrod, 1995) found that generally females were somewhat more likely to make accurate identifications, but also made false identifications more often than men. The particular situation in which an event takes place plays a large part in these differences. For example, Clifford and Scott (1978 as cited in Shaw & Skolnick, 1994) found that men were more accurate than women in their identification when the target was part of a violent scenario. When the scenario was nonviolent, there showed no sex difference. However, studies show females are superior under particular circumstances. Yarmey and Kent (1980 as cited in Shaw & Skolnick, 1994) found females to be more accurate in identifying a female bystander, but not in identifying a male aggressor in a crime scene. Christiansen, Ochalek, and Sweeney (1984 as cited in Shaw & Skolnick, 1994) found females to be more accurate than males in identifying a female confederate. Powers, Andriks, and Loftus (1979 as cited in Shaw & Skolnick, 1994) found that when dealing with female-oriented details, females were both more accurate eyewitnesses and more resilient to misleading questions, just as males were more accurate eyewitnesses and more resilient to misleading questions when dealing with male-oriented details. This quantity of evidence suggests the own-sex bias serving a role in eyewitness identification. In sum, females tend to recall other female faces more accurately than males do, and males tend to recall other male faces better than females do.

Almost identical in theory to the own-sex bias is the own-race bias. This term refers to the discovery that faces of one’s own race are better recognized than faces of another, less familiar race (Wright, et al., 2001). A recent meta-analysis (Field, in press as cited in Wright, et al., 2001) found that people were 1.38 times more likely to accurately recall the face of another who is of the same race, than of someone who is of a different race. Additionally, people are 1.50 times less likely to falsely identify a face of their own race. The cause of this can be attributed to the idea of outgroup homogeneity. An outgroup is a group with which a person feels no sense of membership or identity (Brehm, et al., 2002). The idea of outgroup homogeneity is that, generally, people perceive there to be a greater similarity among members of an outgroup than they do among members of their own ingroup, in other words “they are all alike.” According to Brehm and colleagues (2002), “To people outside the group, outgroup members can even seem to look alike—people are less accurate in distinguishing and recognizing faces of members of racial groups other than their own” (p. 135). The own-race bias can play a profound role in the correct identification of an offender. The race of the witness/victim compared to the race of the aggressor is a significant factor in assessing the accuracy of eyewitness identification. Even biological factors, such as age, race, and gender contribute to how our memory recalls certain events and details. These factors, separately and combined, are important indicators of an eyewitness’s accuracy.

1 Much in-depth review and analysis has been conducted on the own-race bias, which is too vast for the purposes of this paper. Only the basics of this topic will be covered here.
External Factors

External factors, such as suggestive questioning and lineup biases, affect the degree of certainty in one’s decision, and this, in turn, affects the accuracy in the identification process.

Lineup biases refer to the method with which law enforcement officials go about conducting a lineup. These may include choosing distracters to be in the lineup, and/or deciding which method of lineup identification will be used—sequential versus simultaneous. The basic process in lineup identifications is the relative-judgment process. Simply put, eyewitnesses select the suspect from the lineup that most resembles their memory trace of the culprit (Wells, 1995). This process however, is only effective when the actual offender is present in the lineup. When the real offender is not present, there is still one suspect in the lineup that resembles him/her more than the others, and due to this, relative judgment alone cannot determine whether the witness made a correct identification (Wells, 1995).

The use of a distracter, or a “filler,” in the lineup who is known ahead of time to be innocent of the crime, affects the rates of false identifications. Wells (1995) notes that the term “false identification” refers to the identification of an innocent suspect (an unknown error), rather than the mistaken identification of a distracter (a known error). If the police place distracters in the lineup who do not match the description of the suspect, but then put one person in the lineup who they think is the actual offender and who more closely matches the description, this has created a bias and increases the chances of false identification (Wells, 1995). For example, say a witness described the culprit as being a tall male with dark hair and a mole on his face. In the lineup, there are six tall dark haired males; however, only one has a mole on his face. It can be assumed, using relative judgment, that the eyewitness will choose the man with the mole whether he is the right person or not.

The use of distracters who match the description of the culprit lower false identification rates by increasing the chances that a distracter will be chosen by the eyewitness.

A sequential lineup is one in which the witness views one face at a time and must decide whether the suspect is in fact the culprit before moving on to the next face. This is compared to the traditional sequential lineup in which the eyewitness is shown all suspects at the same time. Lindsay and Wells (1985 as cited in Wells, 1995) determined that eyewitnesses could not make relative judgments in this kind of lineup, because though they can be sure that one face matches more accurately to their memory than the ones previous, they do not know if the next face (not yet seen) matches their memory trace even better.

They found that this type of lineup, compared to a simultaneous lineup, yields less false identification, without a decrease in rates of accurate identification. In sequential lineups, the judgment process is transferred from making comparisons between lineup members to making comparisons between each individual lineup member and the witness’s memory for the culprit (Wells, 1995). This is what makes sequential lineups more successful.

Malpass and Devine (1981 as cited in Chambers, 2001) found the significance that biased instructions had in altering a person’s accuracy in recall. In their research they found that when a subject was asked “which of these people” is the culprit, the subject identified someone 78% of the time from a lineup in which the real criminal was not present, thus all identifications were wrong. This type of questioning suggests that the offender is present in the lineup and the witness feels compelled to make a decision. However, when subjects were told that the offender may or may not be in the lineup, identification rates dropped to 33%. These findings show that when an eyewitness is aware that the actual offender may not be in the lineup, they are apt to use more strict criteria in making their choice, and realize that the person who most resembles their memory's image may not actually be the culprit (Chambers, 2001).

Confidence plays a large role in the perceived accuracy of an eyewitness identification. The more confident a witness is, the more credible they are seen by a jury. However, complete certainty is not always a guarantee of accuracy. There are a few factors that go into producing and maintaining certainty. The level of certainty in an eyewitness identification is determined by post-identification information (Wells, 1993). Extramemorial sources are an example of this. If a witness makes a speculative identification, and later is informed that the burglar identified was found with the stolen goods, the witness’s certainty is sure to increase, even though their memory of the culprit is no better than before (Wells, 1993). In 1991, Luus (as cited in Wells, 1993) staged a crime in front of two people: one was a confederate of the experiment, and the other a subject. The subject believed they had viewed an actual crime. The two witnesses were asked separately to identify the culprit, and then together reported their decision to a police officer (who was also a confederate). The subject’s level of certainty varied depending on (1) if they learned that their co-witness identified the same person as they did, (2) if they learned that their co-witness identified a different person, or (3) if the co-witness decided the culprit was not in the lineup. In each of the previous three conditions, the subject’s confidence decreased (i.e., the subject’s confidence was highest when they thought their co-witness identified the same person as they did, and lowest when their co-witness believed the culprit was not present in the lineup).
Shaw (Shaw, 1996; Shaw & McClure, 1996 as cited in Smith, et al., 2000) studied the confidence-accuracy correlation and demonstrated that post-event questioning reduces this correlation. Shaw consistently found that post-event questioning led to an increase in confidence in incorrect choices, but not always in correct choices. This shows that post-event questioning can lead to an increase in certainty without an increase to accuracy (Smith, et al., 2000). It is important to understand and apply the significance of these findings because in reality, a witness will have to go through much post-event questioning both immediately after the event and in preparation for trial.

All external factors discussed were post-event factors that affect the decision made by the eyewitness in the identification process. They deal with the type of lineups and questioning that may alter a witness's choice, force them to make a decision, and make them more confident in their decision even though their memory for the culprit has not improved.

Discussion and Conclusion

Though there has been extensive research conducted on what affects the accuracy of eyewitness identification, there still exist areas that can be further explored. As mentioned earlier, the length of time delay between viewing the subject and subsequent recognition plays an important role in memory accuracy. However, Barkowitz and Brigham (1982) and MacLin and colleagues (2001) failed to investigate the potentiality of contemplation during this waiting period. Future research could look into this area and study whether a witness's memory for a crime changes as a result of having the opportunity to think, replay the events, and reflect on the events that occurred.

Another area that could potentially be explored is the idea of briefly informing jury members, before the trial begins, of these factors involved in assessing the accuracy of eyewitness testimony. Since the internal factors mentioned previously are beyond one's control, there is little anyone can do to control them. However, knowing that they exist can help jurors more critically gauge accuracy and examine testimony more thoroughly.

Conversely, what we can control are the external factors. Fisher and Geiselman (1994) worked to develop a set of retrieval mechanisms used in post-event questioning, when the memory is more susceptible to strategic control. Fisher and Geiselman cited hypnosis as a method of possible memory improvement. However, it was quickly discredited due to studies that reject the idea that hypnosis has any effect on memory enhancement. Additionally, hypnosis has been fond, in some cases, to actually distort memories. Therefore, they sought to apply widely accepted principles of memory to develop an original memory enhancing technique. They called this the Cognitive Interview, consisting of four retrieval mnemonics. These include: 

(a) mentally reinstating the environmental and personal context that existed at the time of the crime, 
(b) reporting everything, regardless of the perceived importance of the information... 
(c) recounting the events in a variety of temporal orders (e.g., both foreword and backward) 
(d) reporting the events from a variety of perspectives (e.g., from that of the witness and also from that of a prominent character) (Fisher & Geiselman, 1994, p. 246).

With this new way of questioning, they found that considerably more correct statements were brought forth by the Cognitive Interview than by hypnosis or standard interview. Comparing the difference between effective and ineffective interview techniques, Fisher and Geiselman (1994) found that effective interviewers ask more open-ended questions, allowing the witness to think and express their thoughts more freely. Ineffective interviews contain more direct, short answer questions. In addition, the Cognitive Interview seems to reduce the biasing effects of leading questions.

The precision of the interview method is heavily relied upon for accuracy and amount of details of an event that are recalled. Nearly all law enforcement officials use a standard, common sense approach to interviewing an eyewitness. However, it has been shown that this method is not as effective, nor is it as efficient, as scientifically developed techniques based on controlled studies. Careful treatment of the memory is very important when dealing with the accuracy of eyewitness identification. It does not take much to completely distort the recollection of an event, especially if it occurred a while back. By carefully and patiently extracting bits and pieces of an event, the likelihood of accuracy increases.

Eyewitness testimony often has a robust impact on juries, and may be the deciding factor of whether a defendant is convicted or let go. Regardless of the integrity jurors credit to eyewitness testimony, scientific studies of perception and memory have continually confirmed that such testimony is subject to inaccuracy.
Works Cited


