

Eyewitness testimony

Background

Although eyewitness testimony is often used in court cases, it is notoriously unreliable. Many experiments have shown that people's memory for crime scenes and criminals' faces can be manipulated by things they experience during or after the crime. For example, the way people are questioned about a crime after the fact may change their memory of the events or introduce false elements. In one experiment, subjects viewed images of a car accident and were asked questions about the images. Subjects who were asked about things that weren't in the images (such as a stop sign, or a yield sign), were more likely to falsely remember seeing those things at a later follow-up session than subjects who weren't asked about those objects. Similarly, studies of police line-ups and photo lineups have shown that it is very easy to introduce subtle biases that cause witnesses to falsely identify innocent people.

John is writing a dissertation in criminal law and wants to include some original research on eyewitness testimony and the problem of false identification. He's particularly interested in whether eyewitnesses are likely to mistake innocent bystanders (ie, people who were also present at the crime scene at the time of the crime) for perpetrators, particularly if the witnesses are questioned long after the crime took place.

Experiment

John teams up with some friends from the psychology major to design an experiment. They decide that there are too many ethical and logistical problems involved in staging fake crimes, or even making people look at photos of crimes. Instead, they devise a memory test that simulates the problem of eyewitness testimony, but doesn't involve showing actual crimes. They will show subjects a series of everyday photos and ask subjects to remember certain people (the "criminals"). Afterwards, they will ask people to spot the faces of "criminals" among distractor faces which also came from the memory set, but which the subjects hadn't been asked to memorize (the "bystanders"). They hypothesize that subjects will incorrectly identify many of the "bystanders" as criminals.

In the experiment, subjects saw 200 pictures of everyday scenes (a student in a library, people on a farm, a woman buying groceries, etc.). Subjects were told to memorize the shop scenes because the people in the shops were "shoplifters" and subjects would later be tested on how well they could identify the "shoplifter" faces. There were 10 of these shop scenes in the experiment, each with exactly one person (whose face could be seen pretty clearly).

For the memory test, subjects were shown cropped images of the faces of the "shoplifters," as well as 10 cropped faces from other photos. These were shown one at a time, shuffled together in random order. Subjects simply had to say whether the face was a "shoplifter" or not. One group of subjects was tested immediately after viewing the 200 photos, and a second group of subjects was tested exactly two weeks later.

John recruited 40 subjects from the school population for the first group (which was tested immediately), and the psychology students recruited 40 people from one of their psychology classes for the second group (which was tested after two weeks). This was done because

John was not sure he could get subjects to come back after two weeks, whereas the psychology students knew they would see their classmates every week.

Results

To determine how well the "eyewitnesses" performed, John counts the number of false alarms in each group. He finds that subjects who were tested immediately after viewing the photos falsely identified the "bystander" faces as "shoplifters" 7.8 times out of 10, on average. Subjects who were tested two weeks later made the same error 5.5 times out of 10. He concludes that eyewitnesses are very likely to falsely identify innocent bystanders as criminals (more than half the time), and that, surprisingly, eyewitness testimony becomes more reliable if people are questioned some time after a crime, rather than immediately afterwards.

Do you agree with John's conclusion? Are there mistakes in this experiment that might explain the results?

Answer key

1. John's conclusion is too ambitious – even if there were no other problems with this experiment, it's not clear how well these results would generalize to actual real-world crime situations. Actual eyewitnesses might be less likely to mistake bystanders for criminals because their attention is much more focused on the criminal (whereas in this experiment, the subjects might have been bored and distracted – pictures of people shopping are not that exciting). Alternatively, eyewitnesses might be less reliable because they are often frightened and under stress. In addition, real eyewitnesses must compare their memory of the criminal to a mugshot (which might be years out of date, with different hair, clothes, etc.), not an exact copy of the face seen at the crime scene, so the memory task really isn't that similar to the real-world case.
2. The fact that one group is all psychology students (who know the experimenters!) and the other is not introduces a major confound. The psychologists who were tested two weeks after the experiment might have made fewer false alarms because they knew more about memory or had different expectations or strategies than the naïve subjects who were tested immediately.
3. Counting only the false alarms is a bad way to judge memory performance. Perhaps the group who was tested two weeks later were just less likely, in general, to say that they had seen a face before. John needs to look at the performance on the "shoplifter" faces (hits and misses) and not just false alarms, in order to understand how people perform on this memory test.
4. Since the test faces are all crops from the original images, it's possible that people were using background information from the cropped images to decide whether they had seen a face before. (They might have decided whether or not a face was a "shoplifter" by whether the face's background contained shop-like things like shelves, or non-shop things like trees or sky.)
5. It's not clear how well matched the "shoplifter" and "bystander" faces were. If there were consistent differences between these (for example, the shoppers were mostly male, and the other faces mostly female), this might have affected the results.

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