



Perceptual Memory is Unreliable

"Memory can change the shape of a room. It can change the color of a car. And memories can be distorted. They are just an interpretation. They are not a record."

This quote from the movie "Memento" nicely summarizes the problem of using memory as a source of evidence. Many situations require a witness or survey consumer to recall an event or to compare something presently seen with something seen in the past. This is a tricky business because memory is highly unreliable. Here's a very brief explanation of why:



Memory is "blurred"

People are much better at discriminating two objects when they are physically present than when one is present and the other is in memory. Two colors which are easily distinguishable when presented side by side will be confused when one or both must be recalled in memory. In fact, while humans can distinguish thousands (some say millions) of physically present colors, one study suggests that they can identify only 17 in memory.

There are several reasons for this. One is that images in our mind are never as clear as an actual perception. If you try to recall your bedroom, you can get a general image of the location of large and significant objects, their shapes, colors, etc. But the image is not nearly as detailed as what you would see if you were actually viewing the room.

Color is a particular good example of memory's low resolution. While there are thousands of colors, research shows that people perceive are only 11 basic color categories: white, black, red, green, blue, yellow, brown, orange, purple, pink and gray. Memory will easily distinguish between colors of different categories (red vs. blue) but will have a very difficult time distinguish shades within a category (blue-green vs. blue-violet.)

Another problem is that memory often stores perceptual information in verbal form rather than as an image. That is, a person might see a blue car. This information is stored in memory as the words "blue" and "car." Later, the person will not be able identify the shade of blue because memory has only stored that fact that the car was blue. Worse, the car perception may have been stored as "dark" and the person so the person will not be able to distinguish among dark colors - dark blue, black, etc. This process of converting images to words-like forms is automatic and people are unaware when they do it.

Several authors have concluded that memory simply encodes the general gist of a scene. For example, memory may code a memory of a person as short, tall, young, fat, thin, old, white, black, rugged, etc. or some combination. If coded as "tall" and "fat", the person will have difficulty discriminating among different tall, fat people. Moreover, the witness might well characterize the person as being jolly, since fat people are stereotyped as being jolly. Memory reconstruction often uses general

knowledge and expectations to fill in blanks of specific memories.



Memory fills in gaps

People are not aware that their memory is low resolution and omits much information. When asked to recall an event, memory attempts to "reconstruct" what was seen. People tend to unconsciously fill in missing information in order to complete the reconstruction. They may do this by combining two memories into one or by using bias or expectations of what probably was seen. Sometimes they use information gathered after the fact. For example, they may talk to another witness and use information from the conversation to fill in their reconstruction of the events. Again, it should be emphasized that people do this automatically and unconsciously and that it is not necessarily a purposeful attempt to deceive.



Memory systematically distorts perception

Memory tends to distort perception in systematic ways. For example, people tend to remember colors as being brighter and more saturated than they actually were. Other studies show that people asked to recall vehicle speed tend to overestimate slow speeds and to underestimate fast ones. Additional studies show systematic biases in remembering distance and size. Lastly, as noted above, memory also biases toward expected events.

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