

# Facial Composite Systems Falling Short

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The mention of facial composites often conjures up images of a sinister criminal, skillfully depicted by a sketch artist using pencil and paper. In reality, the vast majority of law enforcement agencies use mechanized methods, usually computer software, when creating facial composite. By having a vast repertoire of eyes, ears, hair and so on at their disposal, witnesses have the ability to create an image that ideally encompasses all of the features of the perpetrator. So have these technological advances improved our ability to identify and apprehend criminals? Gary Wells and Lisa Hasels of Iowa State University say “no.”

In an article appearing in the February issue of *Current Directions in Psychological Science*, the authors point to several studies that indicate facial composite systems produce a poor likeness of the intended face. For instance, studies in which individuals attempt to create composites of celebrities have yielded extremely poor results. In one particular study, only 2.8 percent of participants correctly named a well-known celebrity that had been created by other participants using the face-composite software. In a separate study, participants were unable to discriminate composites of their classmates from composites of students at entirely different schools.

According to authors, these poor results are not deficiencies in the software per se but instead a mismatch between how we remember faces and how composites are produced. “Numerous lines of evidence converge on the view that faces are generally processed, stored and retrieved at a holistic level rather than at the level of individual facial features.” Ultimately the psychological process of remembering faces may include more complex representations such as multidimensional similarity to other faces or relative sizes and distances of features and so on that are not readily retrieved by memory nor utilized by facial composite software.

The knowledge of holistic processing may be a boon to future face-composite systems that will utilize “whole-face” methods for face recall. Such systems begin by generating a random set of faces and the witness selects the face most similar to their memory of the perpetrator. This will be the “parent” face that yields a set of similar looking faces that are the result of several mutations to the parent face. The witness again makes their choice and the process continues until they can no longer discriminate their options from their memory of perpetrator. Although in its nascent stages, preliminary tests demonstrate whole-face systems to be superior to their traditional composite counterparts.

Attempts to evaluate and improve face composites fit into the larger problem of the criminal justice system, say the authors. Analyses of the first 180 DNA exonerations to occur in the United States revealed that mistaken eyewitness testimony was involved in 75percent of the cases. Guilty suspects may likewise be comforted or encouraged by poor composites that lead crime investigators towards innocent parties, says Wells. “Imagine the solace of the culprit who sees a composite of his face in the newspaper that looks nothing like his face.”

Thus an increasing knowledge of the memory processes involved in facial recognition will help to improve the accuracy of facial composites and ultimately reduce the number of innocent convictions. Simply put, “as the historical and natural home of the science of memory, psychological science has great promise for helping to solve an age-old problem.”