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These Facial Features Matter Most to First Impressions

By Charles Q. Choi, Live Science Contributor | July 28, 2014 03:39pm ET

A computer model has found a smiling expression is key to a first impression of being approachable, while large eyes signal youthfulness, and dominance is linked partly to a masculine face shape.

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You may think you can judge a person you just met based on his or her facial expressions. Does a smile indicate a person is easygoing or insincere? Does squinting show concentration, or mistrust?

First impressions of people — such as whether they are trustworthy, dominant or attractive — can develop from a glimpse as brief as 100 milliseconds or less. Brain scans suggests that such judgments are made automatically, probably outside of people's conscious control.

But now, a computer system that mimics the human brain has identified which facial features most influence how others first perceive a person, scientists say.These findings could lead to computer programs that automatically see which photographs would help people give the best first impressions they can, the researchers added.

Because first impressions can affect people's future behavior and can be difficult to overturn, "it's useful to know how we're being judged on our appearance, especially since these judgments might not be accurate — think of effects on court cases or democratic elections, for example," said study co-author Tom Hartley, a cognitive neuroscientist and psychologist at the University of York in England. "Should we really trust a smiling face?" [Smile Secrets: 5 Things Your Grin Reveals About You]

Although some previous research has suggested that there may be a kernel of truth in some first impressions, Hartley noted that people typically go too far with the judgments they develop from first impressions. "For instance, someone with a young-looking face is judged to have other immature characteristics," Hartley said. "Evidence is clear that often judging a book by its cover is just plain wrong, but we all do it."

Given the increasing presence of faces on social media sites, first impressions could be more important than ever, Hartley suggested.

"Whereas, in the past, we got to know people through meeting them in the flesh, increasingly, our first contact is online, and our first impressions are based on the images we provide on social media profiles," Hartley told Live Science.

Previous research has shown that "the many different judgments characterizing first impressions tend to fall along three underlying dimensions," Hartley said. "One is approachability — do they want to help me or to harm me? The next is dominance — can they help or harm me? The last is youthful-attractiveness — perhaps representing whether they would be a good romantic partner or rival."

Judging images

To learn more about how first impressions are formed, the research team at the University of York found 1,000 photographs of people on the Internet, and showed them to six volunteers. The participants rated their first impressions of the people in the photos on social traits such as trustworthiness and dominance. These images were typical of pictures seen every day, ranging widely in angle, lighting, ages, expressions, hairstyles and so on.

Each face was broken down into 65 physical features, such as the shape of a person's jaw, mouth, eyes, cheekbones or eyebrows. The researchers then analyzed these faces using an artificial neural network, a kind of artificial intelligence computing system that mimics how the brain works. They had the neural network attempt to learn which facial physical features might be linked to first impressions of social traits.

This modelsuggested "that given enough data, we can accurately gauge people's likely impressions of a given image," Hartley said. "If you're thinking about attaching a picture to their CV, résumé or online dating profile, maybe you should take a look at our paper first!"

The model found that mouth shape and area were linked to approachability — unsurprisingly, a smiling expression is a key component of an impression of approachability. When it came to youthful-attractiveness, eye shape and area were important, in line with views linking relatively large eyes to a youthful appearance. Dominance was linked with features indicating a masculine face shape, such as eyebrow height, cheekbones, as well as color and texture differences that may relate to either masculinity or a healthy or tanned overall appearance.

"Our results suggest that some of the features that are associated with first impressions are linked to changeable properties of the face or setting that are specific to a given image," Hartley said. "So, things like expression, pose, camera position, lighting can all, in principle, contribute alongside the structure of our faces themselves. In some ways, our model parallels or makes explicit the kinds of judgment that might be relevant to casting directors, animators and portrait photographers who select or manipulate images to create certain impressions."

Wanna look more trustworthy?

By reversing this process, the researchers created a model that generated cartoon faces depicting the typical characteristics of someone judged as having certain social traits. The researchers compared the results with those of 30 human judges, and found that these cartoon faces usually gave the first impressions they were designed to give. [7 Personality Traits You May Want to Change]

Hartley suggested that future research might be able to use these findings "to select an image which conveys a desirable impression, perhaps even automatically."

However, Hartley noted that the researchers looked only at Caucasian faces in this study, to avoid possible confounding effects of race, though they are currently conducting cross-cultural studies to find out how culture impacts the results.

"We know that people process faces of other ethnicities differently from their own — this might be because of cultural stereotypes, but also more subtle things such as the level of experience we have with different kinds of variation in the face," Hartley said. "As it's not practical to incorporate faces and judges from every possible geographic, cultural and ethnic background, we instead try to keep these factors fixed by focusing on one ethnic and cultural group at a time. We can then investigate the ways in which different groups rely on different facial features and perhaps reach different social judgments in a step-by-step way."

In addition to looking across cultures, future studies can also "use brain imaging to investigate how these social impressions are created in the brain," Hartley said. Another direction for research "will be to look at ways in which first impressions can be influenced by directly manipulating specific features, and whether, with the knowledge we now have, we can influence people's social decisions by choosing images with particular characteristics," he added.

The scientists detailed their findings online July 28 in the journal Proceedings of the National Academy of Sciences.

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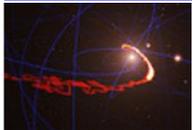[In Photos: Clever Chameleons Stick Out Their Tongues](#)

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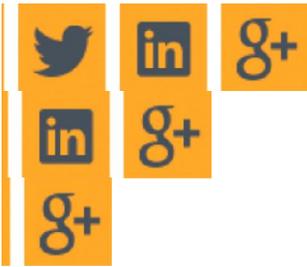
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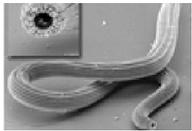
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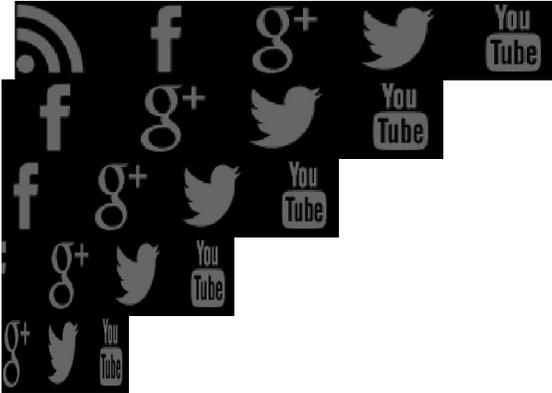[MARVEL Plays Matchmaker In New SPIDER-MAN/DEADPOOL #2 Variant Cover](#)

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