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Face values

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WE shouldn't judge a book by its cover, we are told. Yet we judge people by their appearance all the time, often making decisions about them even before we speak to them. Is this sensible? Obviously someone's face can tell us his or her sex and rough age, but can it tell us about mood, health or personality? And why do we find certain faces more attractive than others?

My colleagues and I have been trying to answer these questions using computer graphics to create composite faces derived from people who share a particular personality trait. We extract the shapes, colours and textures common to the faces of, say, extroverts, and then amplify or diminish them, and ask people to rate the altered images for attractiveness. We have found that someone's face can send out a wealth of signals about what they are like. We have also found a remarkable consistency in people's preferences for faces.

Take masculinity in men, which is very visible on the face. The principal male sex hormone is testosterone. It causes the jaw and eyebrow ridge to become more prominent and facial hair to grow. But it is not without its costs. The hormone suppresses the immune system and diverts energy into building up muscle mass. That means men who thrive on high testosterone clearly have superior immune systems and are capable of getting sufficient nourishment despite this handicap. Women should therefore be attracted to faces that display masculine characteristics.

But masculinity can signal behaviour as well as physiology. On the plus side, masculinity signals dominance. A study of the US army by Ulrich Mueller and Allan Mazur in 1997 (*Social Forces*, vol 74, p 823) showed that the more masculine a recruit's face, the higher the rank he attained. However, our own studies show that people often perceive someone with a very masculine face as cold, dishonest, a poor father and less likely to commit to a long-term relationship. Are such perceptions justified? It appears so. In 1998, Mazur and Alan Booth reviewed previous research and concluded that men with high testosterone are less likely to marry and more likely to divorce (*Behavioural Sciences*, vol 21, p 353).

This presents women with a dilemma: a high degree of masculinity signals some good qualities and some undesirable ones. This may be why women's preferences for "masculine" males depend on their own beauty, health, age and status. Indeed, the same woman can choose differently depending on her circumstances: women may prefer masculine male faces during the fertile phase of their menstrual cycle, or when they are looking for a short-term relationship. Such choices probably also reflect a trade-off between the need to acquire good immune system genes for offspring and a more caring partner for a long-term relationship.

Similarly, typically "female" facial characteristics, such as a small nose and chin, large eyes and full lips, reflect high levels of the hormone oestrogen. These facial traits can signal that a woman is of reproductive age and fertile. Many are most marked in a woman's early twenties and decline with age. Perhaps unsurprisingly, we have found that exaggerating the way female faces differ in shape from male faces makes them more beautiful. We are looking at whether men's preferences vary in the same way that women's do.

What about health? Can a person's face tell us how fit and well they are? Certainly sickness is associated with facial pallor. In the late 19th century Francis Galton merged photographs of tuberculosis victims. The resulting composite face looked pale and ill compared to a composite made up from the faces of British soldiers serving with the Royal Engineers. Today, a study by UK-based researchers Craig Roberts at the University of Newcastle and Ben Jones at the University of Aberdeen suggests that healthy-looking skin on the cheek reflects a healthy immune system and a lifestyle with sensible eating, sleeping and exercise patterns.

A person's health might also be reflected in their facial symmetry. Symmetry reflects the ability to grow straight despite all of life's challenges, including infection and stress. Symmetrical faces are good all round: they are considered beautiful, they have better-looking skin, and symmetrical people even smell nicer.

Perhaps the most useful facial indicators are those that tell us about personality. Is that really possible? Ian Penton-Voak at the University of Bristol and Anthony Little at the University of Liverpool, both UK, have found that it is - up to a point. Using questionnaires, they asked a group of volunteers to choose words that best described their own personalities. People who rate themselves as extroverts tend to use words such as warm, sociable, emotional and affectionate, whereas those who rate themselves as introverts use words with opposite meanings. The researchers then showed photographs of the volunteers to a second group, asking them to describe their personalities based on photographs alone. They found that, in many cases, the way a person described themselves tallied with how other people judged them from the photographs.

Overall, personality insights are better than chance and this can help us in life and love. However, it is important to be aware that our first impressions can be wrong, and we must guard against our presumptions. Moreover, some aspects of personality are not written in the face. Francis Galton attempted to isolate "criminal" facial features by photographically merging the faces of convicted felons. Despite Victorian prejudices, he found no looks common to criminals: indeed, he found his photographic blend of convicts looked surprisingly "handsome".

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