

Face values

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Our facial expressions are emotional seismographs that say the same thing whichever culture we come from. And to all appearances that's down to nature, not nurture.

Paul Ekman

Late in 1967, I went to the South-East Highlands of New Guinea to do research on the Fore people, who lived in small scattered villages at an elevation of 2100 metres. I did not know the Fore language, but with the help of a few boys who had learnt pidgin from a missionary school, I could go from English to pidgin to Fore and back again. I brought with me pictures of facial expressions, mostly those I had been given for my studies of literate cultures.

I worried that they might not be able to understand photographs, never having seen any. Some anthropologists had claimed that people who hadn't seen photographs had to learn how to interpret them. The Fore had no such problem, though; they immediately understood them, and it didn't seem to make much of a difference what

nationality the person was. The problem was what I asked them to do.

They had no written language, so I couldn't ask them to pick a word from a list that fitted the emotion shown. If I were to read them a list of emotion words, I would have to worry about whether they remembered the list, and whether the order in which the words were read influenced their choice. Instead, I asked them to make up a story about each facial expression: "Tell me what is happening now, what happened before to make this person show this expression, and what is going to happen next."

It was like pulling teeth. I am not certain whether it was the translation process, or the fact that they had no idea what it was I wanted to hear or why I wanted them to do this. Perhaps

making up stories about strangers was just something the Fore didn't do.

I did get my stories, but it took each person a long time to give me them. They, and I, were exhausted after each session. Nevertheless, I had no shortage of volunteers, even though I suspect the word was out that what I was asking wasn't easy to do. There was a powerful incentive to look at my photographs: I gave everyone a bar of soap or a packet of cigarettes. They had no soap, so it was highly valued. They grew their own tobacco, which they smoked in pipes, but they seemed to like my cigarettes better.

Most of their stories fitted the emotion each photograph supposedly depicted. For example, when looking at a picture representing what people in literate cultures judged as sadness, the New Guineans most often said that the person's child had died. But the storytelling procedure was awkward, and proving that the different stories fitted a particular emotion would not be an easy task. I knew I had to do it differently, but I didn't know how.

Back home, I came across a technique psychologist John Dashiell had used in the 1930s to study how well young children could interpret facial expressions. They were too young to read, so he couldn't give them a list of words from which to choose. Instead of asking them to make up a story — as I had done in New Guinea — Dashiell cleverly read them a story and showed them a set of pictures. All they had to do was pick the one that fitted the story. I knew that would work for me.

I went over the stories the New Guineans had made up, picking the one that had been given most often for each type of expression. They were pretty simple: "His/her friends have come and s/he is happy; s/he is angry and about to fight; his/her child has died and s/he feels very sad; s/he is looking at something s/he dislikes, or s/he is looking at something that smells bad; he/she is looking at something new and unexpected."

There was a problem with the most frequent story for fear, which was about the danger posed by a wild pig. I had to change it to reduce the chance that it would be relevant to surprise or anger. It went like this: "S/he is sitting in her/his house all alone, and there is no one else in the village. There is no knife, axe, or bow and arrow in the house. A wild pig is standing in the door of the house, and the man/woman is looking at the pig and is very afraid of it. The pig has been standing in the doorway for a few minutes and the person is looking at it very afraid, and the pig won't move away from the door and s/he is afraid the pig will bite him/her."

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I made up sets of three pictures, which would be shown while one of the stories was read. The subject would only have to point to the picture. I made up many sets of pictures. I didn't want any picture to appear more than once.

I returned to New Guinea late in 1968 with my stories and pictures and a team of colleagues to help gather the data. Our return was heralded, I suppose, because very few outsiders visited, and even fewer returned. We did travel to some villages, but once people heard that what we wanted was easy to do, they started coming to us from villages far away. They liked the task and were again delighted with the soap and cigarettes.

I took care to ensure that no one in our group would unwittingly tip off the subjects as to which picture was correct. The sets were mounted onto transparent pages, with a code number written on the back of each picture that could be seen from the back side of the page. We did not know, and made a point of not finding out, which codes went with each expression. Instead, a page would be turned towards the subject, arranged so that the person writing down the answers would not be able to see the front of the page. The story would be read, the subject would point to the picture, and one of us would write down the code number for the picture the subject had chosen.

In just a few weeks, we saw more than 300 people - about 3 per cent of this culture - and more than enough to analyse statistically. The results were clear-cut for happiness, anger, disgust and sadness. Fear and surprise were not distinguished from each other. After the fear story, people picked a surprise expression as often as a fear expression, and the same was true when they heard the surprise story. But fear and surprise were distinguished from anger, disgust, sadness and happiness.

I do not know why fear and surprise were not distinguished from each other. It could have been a problem with the stories, or it could have been that these two emotions are so often intermingled

they aren't distinguished.

All except 23 of our subjects had never seen movies, television or photographs. They neither spoke nor understood English or pidgin, had not lived in any Western settlement or government town, and had never worked for a Caucasian. The 23 exceptions had all seen movies, spoke English and had attended a missionary school for more than a year. There were no differences between the majority of the subjects who had little contact with the outside world and the few who had, nor were there any differences between the sexes.

We did one more experiment, which was not as easy for our subjects. A pidgin speaker read them one of the stories and asked them to show what their face would look like if they were the person in it. I videotaped nine men doing this, none of whom had participated in the first study (two examples are pictured right). The videos were shown to college students in America. If the expressions were culture-specific, then the students would not be able to correctly interpret them. But they did - except for fear and surprise, where they were equally likely to call the pose either emotion, just like the New Guineans.

In 1969, I announced our findings at an annual anthropology national conference in the US. Many were unhappy with what we had found. They were convinced that human behaviour is all nurture and no nature; expressions must be different in each culture, despite my evidence.

The best way to dispel their doubts would be to repeat the study in another preliterate, isolated culture. Ideally, someone else should do it, preferably someone who wanted to prove me wrong. If they found what I had found, that would strengthen our case. Because of another stroke of luck, the anthropologist Karl Heider did just that.

Heider had recently come back from spending a few years studying the Dani, another isolated



Looks familiar ... two of Ekman's Fore subjects interpret enjoyment, top, and sadness. Below, a grieving mother.

group in what is now called West Irian, a province of Indonesia. Heider told me there must be something wrong with my research because the Dani didn't even have words for emotions. I offered to give him all of my research materials and teach him how to run the experiment the next time he went back. His results perfectly replicated my findings, even down to the failure to distinguish between fear and surprise.

How emotions are represented in language is, of course, the product of culture rather than evolution. But in studies of now more than 20 literate Western and Eastern cultures, the judgement made by the majority in each about what emotion is shown in an expression is the same. Despite the translation problems, there has never been an instance in which the majority in two cultures ascribes a different emotion to the same expression. Never.

And, of course, our findings are not limited to studies in which people had to label a photograph with a single word. In New Guinea, we used stories about an emotional event. We also had them pose emotions. And in earlier research in Japan, we measured facial behaviour

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itself, showing that when people were alone, the same facial muscles moved when viewing an unpleasant film whether the person was Japanese or Caucasian.

Another critic disparaged our research in New Guinea because we used stories describing a social situation instead of single words. This critic presumed emotions are words, which, of course, they are not.

Words are representations of emotions, not the emotions themselves. Emotion is a process, a particular kind of automatic appraisal influenced by our evolutionary and personal past, in which we sense that something important to our welfare is occurring, and a set of physiological changes and emotional behaviours begins to deal with the situation. Words are one way to deal with our emotions, and we do use words when emotional, but we cannot reduce emotion to words.

No one knows exactly what message we get automatically when we see someone's facial expression. I suspect that words like anger or fear are not the usual messages conveyed when we are in the situation. We use those words when we talk about emotions. More often, the message we get is much like what we had in our stories - not an abstract word but some sense of what that person is going to do next or what made the person feel the emotion.

Another quite different type of evidence also supports Darwin's claim that facial expressions are universal, a product of our evolution. If expressions do not need to be learnt, then those who are born congenitally blind should manifest similar expressions to those of sighted individuals. A number of studies has been done over the past 60 years, and repeatedly that is what has been found, especially for spontaneous facial expressions.

Our cross-cultural findings provided the impetus to seek answers to a host of other questions about facial expressions. How many expressions can people make? Do expressions provide accurate or misleading information? Is every movement of the face a sign of an emotion? Can people lie with their faces as well as with their words? There was so much to do, so much to find out. Now there are answers to all these questions, and more. ■

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