

# The limit of reading facial movements

**H**ave you ever misunderstood someone's mood or reaction? You thought you'd read their face perfectly, yet hours or days later found that they had been experiencing completely different emotions. Rather than anger or disgust, they were actually both sad and fearful. Similarly, your own mood or reactions might also have been misunderstood by someone else.

You might think it's obvious that we can't always accurately read someone's emotions – after all, everyone's different. Yet, traditional academic research in emotion science over the past 50 years has assumed that we can. In industry too, market researchers often try to gauge a consumer's response to a product or service by assessing their emotive response via basic facial expressions. Many of the big tech companies even claim to be able to detect emotions from facial movements automatically using artificial intelligence.

But this approach merely detects and codes patterns of facial movements to categorise only a handful of emotions and emotional reactions to staged stimuli. It makes the crucial assumption that emotions are always expressed in a uniform way only via facial 'expressions'.

But the latest science suggests that emotions are expressed in a far more nuanced and complex way. A major review led by Professor Lisa Feldman Barrett, published in 2019, found that the facial movements we make to express emotion are far from uniform. A diverse team of psychologists, neuroscientists and computer scientists reviewed 1,000 papers and found that facial movements do not reliably indicate emotions.

In other words, while people do often smile when happy, or scowl if angry, people also express emotions using a variety of facial expressions, which might vary across culture, situation, across people, or even the same person, depending on the context.

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'universal' or 'basic' emotions. Yet the latest research reliably points to more than 20 emotions such as guilt, contempt, awe, love and shame. And rather than single emotions, we also tend to experience mixes of different emotions. New research published in 2019 by Alan Cowen and Dacher Keltner, psychologists at the University of California, Berkeley, and their colleagues, point out that "many – even most – experiences of emotion are complex, involving blends between disgust and horror, for example, or awe and feelings of aesthetic appreciation, or love and desire, or sympathy and empathic pain".

Cowen has also explored how we express emotion in a whole

from different cultures choose different words to label the same facial expression. Adolescents from Papua New Guinea interpreted a gasping face as one conveying anger and threat, whereas in the West, people tend to perceive this as fear and submission.

A 2018 study (Cordaro, Sun, Keltner, Kamble, Huddar and McNeil) also found considerable variability in how emotions are expressed across cultures. When people from five different cultures – US, China, India, Japan and Korea – heard 22 emotion-specific situations described in their native language and expressed the identified emotion, only 50% of their expressive behaviour was the same across the five cultures. A quarter (25%) of their behaviour was culturally specific.

Therefore, although a researcher or a machine might be able to detect what is assumed to be 'a scowl', it does not mean the person is necessarily feeling angry. In fact, researchers have found that people 'express' a scowl less than 30% of the time they are angry. People also scowl when they aren't angry – for instance, they might 'scowl' when thinking deeply. Similarly, they might 'feel' angry internally, yet show no facial expression at all outwardly.

Much of the previous research has focused on what are known as the six 'universal' or 'basic' emotions. Yet the latest research reliably points to more than 20 emotions such as guilt, contempt, awe, love and shame. And rather than single emotions, we also tend to experience mixes of different emotions. New research published in 2019 by Alan Cowen and Dacher Keltner, psychologists at the University of California, Berkeley, and their colleagues, point out that "many – even most – experiences of emotion are complex, involving blends between disgust and horror, for example, or awe and feelings of aesthetic appreciation, or love and desire, or sympathy and empathic pain".



range of dimensions – through voice tone, vocal bursts or sighs, the gaze, posture, head movements, body language and touch. Some emotions may be better or more easily expressed in ways other than through facial movement. For example, awe is more often communicated through the voice than the face, and pride is best communicated through postures combined with facial expression. Therefore, it may be more productive to talk about 'expressive behaviour' to encompass these wider factors.

Cowen has mapped expressive behaviour and emotion. He examined people's recognition of facial and bodily expression in 1,500 images, and found that people could reliably identify 28 different types of emotion, most with considerable overlap, particularly around the positive emotions such as love, ecstasy and contentment and across negative emotions such as distress, sadness and pain.

This paradigm shift has huge implications for consumer research, technology, for the court of law, for everyday so-called 'emotional intelligence' and many other situations.

## Implications

- Be wary of technology companies claiming to 'read' emotions and feelings through people's facial expressions. All these programs are really able to do is detect facial movements, yet facial muscle movements are just a small part of expressive behaviour. Neither do these programs account for context.
- Voice tone, posture, head and hand movements, touch, gaze and vocal bursts may all reveal more about the emotion someone is feeling than trying to detect facial movements alone. Keep in mind cultural variations in expressive behaviour. Rather than trying to narrow down on a single emotion, allow for a complex blend of emotions to be expressed. Simply identifying whether someone is feeling positive or negative emotions can be useful.
- Knowing that we cannot always accurately read or measure emotion places even greater importance on open-ended interviews and questioning, avoiding putting words into participants' mouths and asking 'How do you feel about that?' rather than 'Were you upset?' or 'Did that make you angry?' It's valuable to acknowledge that a participant may be labelling a feeling as a particular emotion based on their built experience, that they may not even be aware of the emotions or that they struggle to express the exact mix of emotions they are feeling with the right words.
- Research conducted in-context is desirable given that studies show that emotions and emotional expressions can vary across contexts. A lab setting or viewing room may not generate the same facial movements or emotional expression as research conducted in a more natural setting and also may not cross cultural boundaries.
- Paired interviews may be better able to reveal more insight into participants' feelings given that expressive behaviours vary by person. Conducting research with friendship pairs, couples or family – sets of people who know each other intimately – who can read each other's unique expressive behaviours well, is likely to reveal the greatest insight.