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SCIENCE & TECHNOLOGY

Learning to be more cheerful? Richard Nixon in 1948 (left) and (right) enjoying a Presidential joke with Mr Brezhnev

Why smiling could be good for you

Perhaps there is a subtle chemical relationship between our moods and our facial expressions. Robert Temple explains

IT IS POSSIBLE that our facial expressions cause us to feel emotions, rather than merely serving to express them. This is the basis of a theory recently proposed in the American journal Science by American psychologist, R. B. Zajonc, of the University of Michigan at Ann Arbor. The idea was first suggested in 1907 by an obscure French doctor named Israel Waynbaum, whose book, Human Physiognomy, Its Mechanism And Social Role, sank without trace until recently rediscovered by Zajonc.

Waynbaum in many ways was ahead of his time, anticipating such things as the steady state of the cerebral blood flow. His theory of facial expression was intended to remedy the inadequacies of the theory previously set forth by Charles Darwin in his book, The Expression Of The Emotions In Man And Animals, which is still available in paperback reprint (University of Chicago Press, £8.50). Darwin had been more interested in shoring up his theory of evolution by appealing to facial expression for its adaptive functions. But, as Waynbaum pointedly observed, what is adaptive about showing one's fear to an enemy, or one's surprise to an intruder? Clearly, something other than survival is being served here.

Human beings have 80 facial muscles on average, though some people lack crucial ones, such as the risorius muscle which extends the angle of the mouth. But why do we need these muscles? What purpose is served by our expressing on our faces such a wide variety of attitudes and feelings? It has recently been discovered in experiments with actors that the nervous impulses for assumed or "acted" facial expressions come from an entirely different set of nerves from the impulses which give rise to spontaneous facial expressions. This in itself is a curious discovery which from most points of view would be inexplicable. But it fits nicely with Zajonc's revised version of the old Waynbaum theory of expression, which suggests that the spontaneous expressions are the ones which give us the more intense feelings.

Waynbaum had suggested that since the face and the brain received blood from the same source, namely the common carotid artery, the face was a kind of reservoir into and from which blood could flow to keep the amount of blood in the brain steady. This would in turn effect our emotional states and feelings. As Zajonc points out, this idea is not tenable in its crude form because the cerebral blood flow has been found to be so steady that it had not altered in experiments with subjects who had violently excercised for ten minutes, and who were huffing and puffing with their hearts pounding.

But Waynbaum's idea may well apply in a more subtle form, Zajonc maintains. He thinks that the constriction or release of blood vessels in the face by the movements of facial muscles, pressed as they are against the bones, cause changes of small amounts of regional blood flow in certain brain areas, fractionally raising or lowering brain temperature in selected places by less than a degree. This in turn, he believes, triggers the release or the supression of certain brain chemicals which either make us feel good or make us feel lousy.

Zajonc actually believes that people who go around smiling all the time feel happier because the smiles are triggering the prduction of "happy" brain chemicals. And we all know sourpusses who not only frown all the time but are bad company as well. Zajonc thinks they are making themselves dreary by looking dreary.

Many hitherto unanswered questions about facial expression are answered in Zajonc's theory. Facial expression in his view is seen as a means of achieving empathy between individuals. The reason why we make our faces form expressions to match those of characters in films is that by doing so, we are feeling more empathetically the experiences of the charactrs we are watching. This makes not only for richer subjective human experience, but for more harmonious relations between people, since we are better able to understand what other people are going through.

As for uncontrollable surges of blood in the face of blushing, it is an outlet of excess blood which would otherwise go to the brain, and which is sidetracked into the face. Blushing occurs when people are embarassed and wish to flee, but cannot do so because of social decorum or timidity. So the excess blood which would normally be needed to aid flight floods the facial vessels as its means of escape, to preserve the brain. Likewise, pallor occurs when the brain needs more blood, such as intensive thinking or concentration; it merely takes blood from the face.

Zajonc amusingly states that "Waynbaum's faith in his theory led him to assert that if the main carotid artery branched off not at the neck but at the shoulders, we would express our emotions with our arms and blush with our shoulders." Clearly, Zajonc's revision of Waynbaum's theory is something we should not just shrug off, even though we blush with our faces and not our shoulders. Zajonc presents several suggestions for experimental testing of his theory. And he says that depressives might be made to feel more cheerful if they were given the right facial exercises, such as forcing themselves to smile more. He even thinks that the reason why migraine sufferers often lick their lips is to ameliorate the faulty muscles. There is much in Zajonc's theory which should be tested, considering that if it be true, it could benefit large numbers of people — manic depressives, social misfits, unsuccessful salesmen, and jilted lovers, to name but a few.