

Asymmetry in Facial Expression

The conclusion of Sackeim *et al.* (1) that there is "greater right-hemispheric involvement in the production of emotional expression" is unwarranted. They found that observers judge double-left composite faces as showing more intense emotion than double-right composite faces. However, they failed to consider the possibility that peripheral neural and anatomical differences rather than differences in the activity of the right and left cerebral hemispheres could explain such results. Facial surgeons note (2) that the two sides of the face differ in the size of the muscles, in fatty deposits (3), and in the neural supply from the facial nerve nucleus to the facial muscles. Without controls for such differences, the findings of Sackeim *et al.* cannot be interpreted as being due solely to differences in the impulses sent from the two cerebral hemispheres to the facial nuclei.

There is also reason to question whether Sackeim *et al.* were justified in talking about lateralization in emotional expressions, since they studied a different type of facial movement. Neurologists distinguish between voluntary facial movements (by which they usually mean the ability to perform requested actions) and spontaneous emotional expressions. The evidence is clear that these two types of facial activity depend upon different neural pathways (4). The potential independence of these two types of facial actions is dramatically shown in clinical cases in which lesions in the pyramidal system (for example, the precentral gyrus) impair requested facial movements but leave emotional facial movements intact, whereas lesions in nonpyramidal systems produce the reverse pattern. This evidence emphasizes the need for caution in generalizing from studies of requested facial movements to emotional expression and vice versa. Thus, it is crucial to know whether the facial movements studied by Sackeim *et al.* were requested or more spontaneous emotional expressions.

Sackeim *et al.* did not accurately describe the photographs they used, which W. V. Friesen and I supplied to them. They wrote that the pictures showed "posed" emotions, or "subjects deliberately attempting to convey particular emotions." Posing may involve either deliberate performance or some attempt to reexperience an emotion to produce the expression. If our photographs had been posed it would be unclear which kind of facial movements Sackeim *et al.* had studied. With few exceptions, however, the photographs they used were not even poses, but the most deliberate

performance of requested facial movements. In describing how the photographs were taken, Friesen and I wrote that the photographic models "were not told to feel an emotion, but rather given instructions such as lower your brow so that it looks like this, . . . or tighten your lower eyelid" (5, p. 170). Because our photographs were of requested facial movements, not of emotional poses, there must be even more caution in generalizing to spontaneous facial expression of emotion.

The fact that they found no left-right differences in judgments of the happy photographs is important since, unknown to Sackeim *et al.*, these were the only photographs of spontaneous emotional expression rather than deliberately performed facial actions. In making the happy photographs, we caught the models off guard during a spontaneously occurring happy moment in the photographic session. It might be argued that the reason no left-right differences were found in these happy pictures was not because they showed spontaneous rather than requested actions, but because positive emotions alone are not asymmetrical in appearance (6). However, Ekman, Hager, and Friesen (7) found that asymmetrical deliberate smiles are usually more intense on the left than on the right side, and they replicated findings by Lynn and Lynn (8) that asymmetrical spontaneous smiles are relatively infrequent and are not usually more intense on a particular side of the face. These findings suggest that facial asymmetry (with left stronger than right) is apparent only with deliberate and not spontaneous expressions, but studying muscle movements involved in the negative emotions is necessary to generalize beyond the smile.

The issue of left-right differences is not resolved for either emotional expression or requested facial movements. Both types of action need to be studied, ideally in the same subjects and in situations that clearly differentiate the type of facial movement elicited. The methods must control or bypass the type of peripheral differences in facial anatomy that cloud results based solely on observers' judgments of emotion. For now, more caution is needed in interpreting the findings from studies based on observers' judgments of emotion to either requested facial movement or emotional expression, and in generalizing from studies of the former to the latter.

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References and Notes

1. H. A. Sackeim, R. C. Gur, M. C. Saucy, *Science* 202, 434 (1978).
2. As a facial surgeon with wide experience with face-lifts, parotid gland operations, and surgery to remedy facial paralysis, R. Crumley (personal communication, 1 February 1980) has stated that he has little doubt that asymmetry of facial structure is the rule rather than the exception.
3. Data on consistent differences in the relative size of the left and right sides of the face are reported in P. H. Burke, *Hum. Biol.* 43, 536 (1971).
4. A. Mehlke, *Surgery of the Facial Nerve* (Saunders, Philadelphia, 1973); R. E. Myers, *Ann. N.Y. Acad. Sci.* 280, 745 (1976); K. Tschiaschy, *Ann. Otol. Rhinol. Laryngol.* 62, 3, 677 (1953).
5. P. Ekman and W. V. Friesen, *Unmasking the Face* (Prentice-Hall, Englewood Cliffs, N.J., 1975); *Pictures of Facial Affect* (Consulting Psychologists Press, Palo Alto, Calif., 1976).
6. There are still ambiguities about asymmetry in smiling. R. Campbell [*Cortex* 14, 327 (1978)] found asymmetries in requested smiles, but has said, "I did find expressor asymmetries. . . . These have turned out to be due to the left side of face . . . being rated 'more sad' in a 'relaxed,' unposed still photo than the right side of face. In fact, of the eighteen right-handers I used I did not find that a posed smile was stronger on the left of the face. So the discussion in the paper is a bit misleading" (personal communication, 3 December 1977). G. E. Schwartz (personal communication) has found asymmetries in electromyographic activity in the facial area relevant to the smile, but it is not certain that he was studying spontaneous emotional expression.
7. P. Ekman, J. C. Hager, W. V. Friesen, in preparation.
8. J. G. Lynn and D. R. Lynn, *J. Abnorm. Soc. Psychol.* 33, 291 (1938); *ibid.* 38, 250 (1943).
9. I thank W. V. Friesen, J. Hager, H. Oster, and M. O'Sullivan for their comments.

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