

Pan-Cultural Elements in Facial Displays of Emotion

Abstract. Observers in both literate and preliterate cultures chose the predicted emotion for photographs of the face, although agreement was higher in the literate samples. These findings suggest that the pan-cultural element in facial displays of emotion is the association between facial muscular movements and discrete primary emotions, although cultures may still differ in what evokes an emotion, in rules for controlling the display of emotion, and in behavioral consequences.

In studies in New Guinea, Borneo, the United States, Brazil, and Japan we found evidence of pan-cultural elements in facial displays of affect. Observers in these cultures recognize some of the same emotions when they are shown a standard set of facial photographs. This finding contradicts (i) the theory (1) that facial displays of emotion are socially learned and therefore culturally variable; and (ii) the findings from studies within a single culture that observers of the face alone do not achieve either accuracy or high agreement in recognizing different emotional states (2).

Bruner and Taguri (3) said: "The best evidence available [from 30 years of research] seems to indicate that there is no invariable pattern (or at least no innate invariable pattern of expression) accompanying specific emotions." In contrast, our findings support Darwin's (4) suggestion that facial expressions of emotion are similar among humans, regardless of culture, because of their evolutionary origin.

Our study was based in part on Tomkins' (5) theory of personality, which emphasized the importance of affect and which postulated innate subcortical programs linking certain evokers to distinguishable, universal facial displays for each of the primary affects—interest, joy, surprise, fear, anger, distress, disgust-contempt, and shame. Ekman and Friesen (6) reasoned that past impressions of cultural differences in facial displays of affect may represent a failure to distinguish what is pan-cultural (the association of facial muscular movements with each primary affect) from what is culturally variable

(learned affect evokers, behavioral consequences of an affect display, and the operation of display rules).

Display rules were defined as procedures learned early in life for the management of affect displays and include deintensifying, intensifying, neutralizing, or masking an affect display. These rules prescribe what to do about the display of each affect in different social settings; they vary with the social role and demographic characteristics, and should vary across cultures.

To uncover the pan-cultural elements in facial displays of affect, the investigator must obtain samples (photographs) of facial expression that are

free of cultural differences because of learned evokers, display rules, and consequences. We attempted to select such photographs and to prove that observers from different cultures recognize the same affect from the same photograph. Because similarities in the recognition of emotion among literate cultures might be attributed to learning their own or each other's facial affect cues from a shared visual source (television, movies, or magazines), it was necessary to obtain data also from visually isolated cultures, preferably preliterate cultures.

Photographs were selected from over 3000 pictures to obtain those which showed only the pure display of a single affect. The selection was guided by a study in which Ekman, Friesen, and Tomkins (7) developed a procedure for scoring facial affects that was based on a compilation of lists of cues particular to each primary affect. The scoring procedure had not been completed when the photographs were selected for this cross-cultural study, but the

Table 1. Rates of recognition of six affects among samples from the United States, Brazil, Japan, New Guinea, and Borneo.

Affect category	United States	Brazil	Japan	New Guinea*		Borneo*
				Pidgin responses	Fore responses	
Happy (H)	97 H	97 H	87 H	99 H	82 H	92 H
Fear (F)	88 F	77 F	71 F	46 F	54 F	40 F
			26 Su	31 A	25 A	33 Su
Disgust-contempt (D)	82 D	86 D	82 D	29 D	44 D	26 Sa
			14 D	23 A	30 A	23 H
Anger (A)	69 A	82 A	63 A	56 A	50 A	64 A
	29 D		14 D	22 F	25 F	
Surprise (SU)	91 Su	82 Su	87 Su	38 Su	45 F	36 Su
				30 F	19 A	23 F
Sadness (SA)	73 Sa	82 Sa	74 Sa	55 Sa	56 A	52 Sa
				23 A		
		Number of observers				
	99	40	29	18	14	15
	Number of stimuli for which most frequent response was predicted response					
	30/30	30/30	29/30	11/24	12/24	18/23
	Number of stimuli for which 70 percent of the observers agreed					
	25/30	26/30	23/30	7/24	6/24	6/23
	Chi-square†					
	10,393	3818	2347	532	261	427
	Chi-square excluding happy stimuli†					
	5718	2119	1241	188	92	211

* A few photographs, mostly happy pictures, were eliminated in work with preliterate observers in order to make the task shorter. † All chi-squares were significant beyond $P=0.01$.

partial lists provided the basis for choosing pictures which contained cues distinctive for happiness, surprise, fear, anger, disgust-contempt, and sadness. This list of affects includes all of Tomkins' primary affect categories except for interest and shame; it also includes almost all of the affect states, discriminable within any one culture.

The most common reasons for rejecting photographs were that they showed the influence of display rules or blends of the cues of one affect with those of one or more other affects rather than single-affect pictures. Thirty photographs met our criteria; they showed male and female Caucasians, adults and children, professional and amateur actors, and mental patients. The stimuli were reproduced as 35-mm slides and photographs (13 by 18 cm) cropped to include only the face and neck.

The observers' task was to select a word from a list of six affects for each picture. In the United States, Brazil, and Japan, slides were projected one at a time for 20 seconds each to groups of freshmen college students from whom the foreign-born had been eliminated. The photographic prints (13 by 18 cm) were shown one at a time to each observer in New Guinea and Borneo. The affect words were translated into the locally understood languages (Japanese, Portuguese, Neo-Melanesian Pidgin, Fore, and Bidayuh). There were no Neo-Melanesian Pidgin equivalents for disgust-contempt or surprise, and in these cases a phrase was submitted (looking at something which stinks, looking at something new).

For our isolated, non-Western preliterate samples we attempted to find those least affected by the modern technological, commercial, and ideological currents. The New Guinea sample was the Fore linguistic-cultural group (8) who until 12 years ago were an isolated Neolithic material culture. We studied the Fore most influenced by contacts with Westerners (government, missionaries, and others) as well as those least influenced by these recent contacts who have preferred to remain in their isolated hamlets in the mountains.

We report in detail only on the most Westernized Fore; we summarize the results on the less Westernized Fore, whose unfamiliarity with certain tasks required development of specialized judgment procedures and conducting a number of additional experiments. There were two subsamples in the most Westernized Fore; one subsample per-

formed the judgment task by using Pidgin translations of the affect terms, and the other subsample used the affect terms of their own Fore language.

The Borneo sample was the Sadong, a Bidayuh-speaking group of Hill Dyaks in southwest Sarawak. These people still lived in their traditional long houses and maintained their traditional agrarian way of life. Only one man spoke English, most men spoke some Malay, and many had seen a few movies in a commercial center located about a day's walk from their village.

The distribution of six responses to each category (affect) of photographs was tallied, and the most frequent judgment response for each affect category was converted into a percentage of the total responses to the stimuli which represented that category (Table 1). The data from the three literate samples support our contention of a pan-cultural element in facial affect display. Agreement and accuracy were far higher in each group than had been reported for recognition of emotions within cultures, and the same affect term was the most frequent response in the United States and Brazil for all of the stimuli and for 29 out of the 30 stimuli when Japan is compared. Three literate cultures are not a sufficient sample to proclaim universality; however, Izard (9), who worked independently at the same time as we, but with his own set of facial photographs obtained results for eight other literate cultures that are substantially the same as ours.

When exposure to common visual input is controlled (to answer the argument that such similarities among literate cultures only reflect learned recognitions from mass media) the agreement and accuracy were lower in the preliterate cultures than in the literate ones. We believe that this is because of the enormous obstacles imposed by language barriers and task unfamiliarity in preliterate cultures (even with the more Westernized observers). Despite such handicaps, there were similar recognitions of happiness, anger, and fear in all samples, and for disgust, surprise, and sadness in two out of three samples (Table 1). An affect category was never misidentified by the majority of observers in more than one of the preliterate samples. Our studies of other much less Westernized Fore observers yielded similar results, with the exception of the sadness category, and we also obtained additional support in

studies in progress on how these affects are expressed in the Fore. The possibility that the data on the preliterate samples might have been biased by the use of Caucasoid faces as stimuli was negated by additional studies in which Melanesian (South Fore) faces were shown to the South Fore observers and results similar to those reported here were obtained. The proposition that there are pan-cultural elements in human affect displays appears to be largely supported, both in the literate cultures that we and Izard have studied, and for the most part in the preliterate cultures that we have investigated. Those who deem it important to have maximum control for shared visual input to limit the opportunity to learn common affect recognitions might still want the further evidence on the less Westernized samples of Fore to be reported later.

PAUL EKMAN

*Langley Porter Neuropsychiatric
Institute, San Francisco,
California 94122*

E. RICHARD SORENSON

*National Institute of Neurological
Diseases and Blindness,
Bethesda, Maryland 20014*

WALLACE V. FRIESEN

*Langley Porter Neuropsychiatric
Institute*

References and Notes

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