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Sauter, D.A.; Eisner, F.

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## Commonalities outweigh differences in the communication of emotions across human cultures

In a recent study, Jack et al. (1) examined the perception of emotional facial expressions using reverse correlations of viewers' classifications of randomly generated muscle movements. The authors argued that their findings refute the notion that facial expressions of emotions are shared across human cultures. The reverse-correlation approach is a fresh and interesting contribution to the cross-cultural study of emotional communication. However, the strong claim of refutation is not supported by their data.

Before evaluating cross-cultural differences, it is important to consider whether the methodology provides a reliable measure of established facial emotional configurations within frequently studied populations. Previous work with a Caucasian sample found correlations from 0.32 to 0.91 between the results of reverse-correlation analysis and established facial actions (2). This finding suggests that, although the measure is good for some emotions, this method is imperfect even in the "baseline" case of Caucasian Europeans. Explanations for the variability may be that randomly varying movement parameters fail to account for the fact that viewers perceive emotional facial expressions configurally, rather than by processing facial movements independently (3), and that dynamic cues—such as order, synchrony, and speed—matter (4).

The authors argued that, according to the universality hypothesis, six emotions should form distinct clusters, because these are cross-culturally expressed using different combinations of facial movements. Although their statistical analysis found an optimal solution with fewer than six clusters in the East Asian (EA) group, Fig. 2 in the article appears to show that, with the exception of fear in the EA group, each emotion was judged on the basis of a different constellation of facial muscle movements in both groups. This result fits well with the established finding that emotional facial expressions are largely consistent across cultures (see ref. 5 for a meta-analysis).

However, there is generally less specificity in the EA data. Several potential factors may underlie this lack of specificity. Because the Chinese "cultural group" includes many cultural and linguistic subgroups, variability even for in-group signals should be expected, because perceivers are more sensitive to emotional signals from in-group members (5). More variability is also expected for out-group recognition by EA participants because of levels of cross-cultural exposure, as there are fewer Caucasians in most parts of China than there are Chinese in many parts of the United Kingdom. Finally, the classification task relied on participants' understanding of English emotion terms, which may have been more variable in the EA sample because of varying lexical correspondence to English emotion terms across Chinese languages, as well as varying English proficiency.

Neither previous studies nor the data presented herein have found major disagreements between cultures in their judgments of emotional expressions. The pattern of broad agreement and small differences has consistently been found across many studies, and is already incorporated into leading "universalist" accounts (5). Consequently, Jack et al.'s results do not refute "universalist" accounts of emotional communication, although their data provide a unique contribution to the study of consistencies and differences in the perception of specific emotional facial cues.

**Disa A. Sauter<sup>a,1</sup> and Frank Eisner<sup>b</sup>**

<sup>a</sup>*Department of Social Psychology, University of Amsterdam, 1018 XA Amsterdam, The Netherlands; and* <sup>b</sup>*Max Planck Institute for Psycholinguistics, 6500 AH Nijmegen, The Netherlands*

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<sup>1</sup>To whom correspondence should be addressed. E-mail: d.a.sauter@uva.nl.